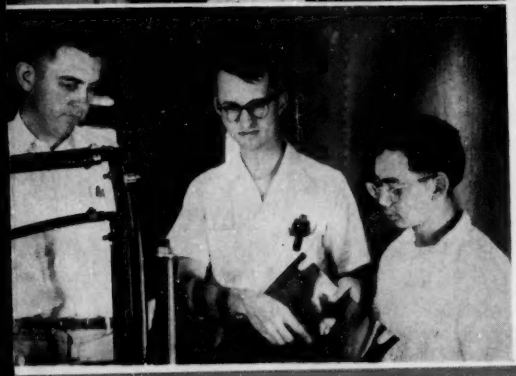
Chemical Week

December 8, 1956

Price 35 cents



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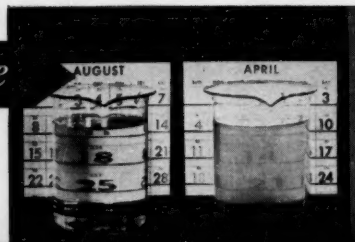
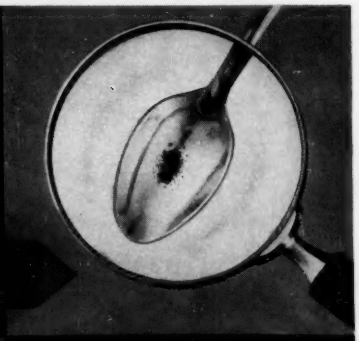
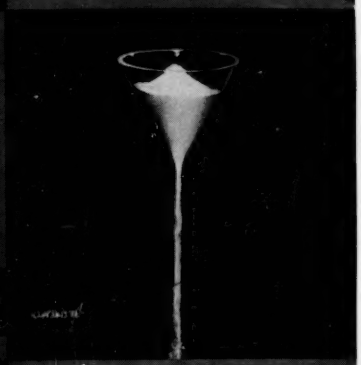


low iron content

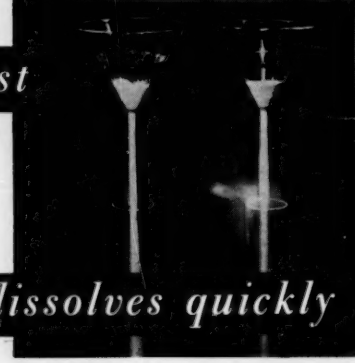


low insoluble residue

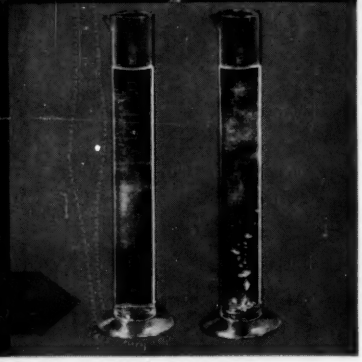
flows more freely



less tendency to dust



dissolves quickly



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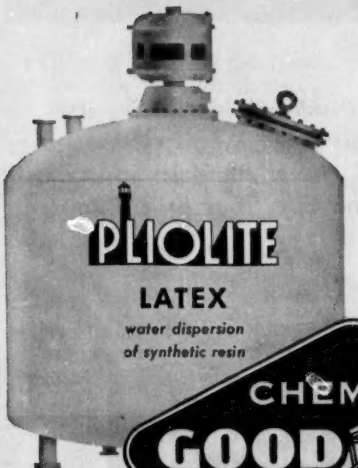

The key to a top-quality clay coating for offset or letter press stock lies in the binder. And today's top performing binders are based on a styrene-butadiene copolymer latex, such as PLIOLITE LATEX.

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Chemical Week

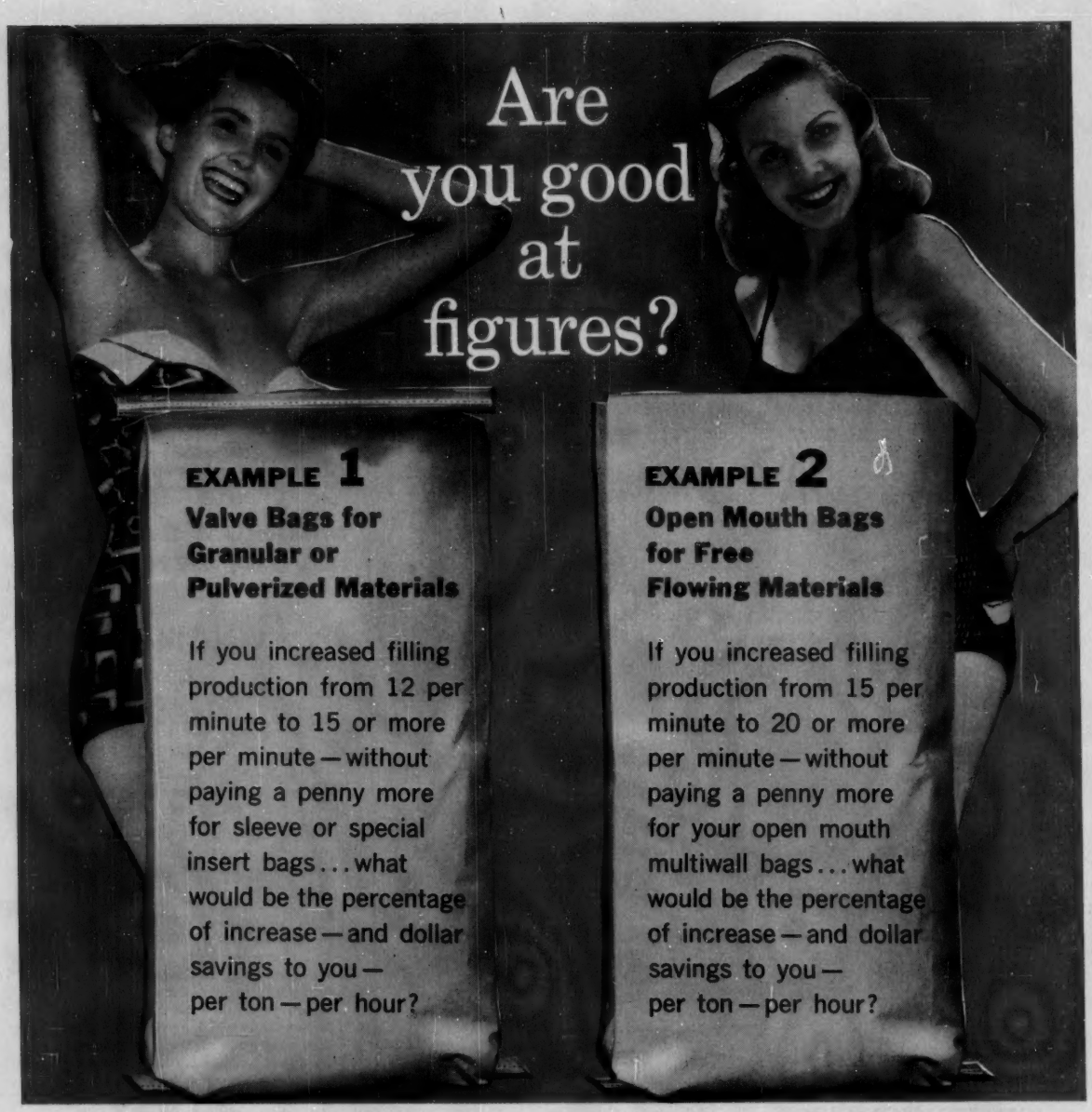
TOP OF THE WEEK **December 8, 1956**

Baltimore chemical men are objecting to proposed new city tax on inventories and machinery .....p. 23

Britain will definitely join European free-trade zone. Here's what chemical groups say about it .....p. 24

Boom in citrus bioflavonoids wavers as controversy rages over their effectiveness against colds ....p. 38

Mixed truckload selling of chemicals is on the rise, and most distributors don't like it .....p. 90



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Chemical Week

December 8, 1956 *Vol. 79, No. 23*

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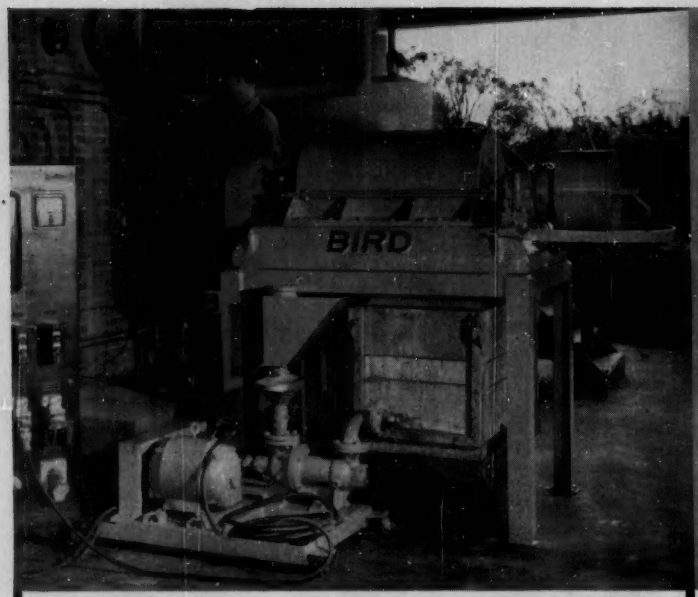

This "Baby" Bird proves what its Big Brother can do . . .

BEFORE YOU BUY YOUR FILTERING EQUIPMENT

EXAMPLE:

Removing a Process "Stumbling Block"

In working out the processing of a new synthetic resin, the dewatering step posed a serious problem until tests showed that the Bird Continuous Centrifugal Filter could meet all process requirements, as well as preventing the solids build-up or fusion previously thought unavoidable.

EXAMPLE:

Achieving an Efficient Wash *Continuously*

Before visiting the Bird Research and Development Center, one user doubted the ability of the Bird Continuous Centrifugal Filter to wash adipic acid solids as efficiently as could be done in a batch centrifugal. Test results showed that an unwashed cake containing .76% impurity, was washed in the Bird to 99.99% purity with only .55 lbs. of wash per lb. of dry solids — results equal to any ever obtained with batch equipment.

EXAMPLE:

Speeding Up Production and Lowering Solvent Losses

In the process of recovering inedible cocoa butter from expeller cake, one of the steps involves removing 5% entrained solids from an oil rich solvent. Unhappy with results being obtained, the processor had the Bird Research and Development Center make tests which showed that the Bird Continuous Centrifugal Filter could do the job at a greatly increased production rate with an appreciable reduction in solvent loss. Special vapor-tight construction of the Bird is a big advantage on applications like this.

EXAMPLE:

Making the Grade When Operating Conditions Get Tough

In a "detinning" plant, existing methods of recovering sodium stannate from a dissolving solution proved wholly inadequate when the strength of the caustic solution had to be sharply increased to handle a new type of lacquer being applied to the tinned sheet. Tests made on a sample of the dissolving tank slurry showed that a Bird Continuous Centrifugal Filter handled this tough job efficiently, recovering practically all of the tin value.

The Bird Research and Development Center has the pilot-scale facilities and equipment to prove to you exactly what you'll be getting in terms of moisture removal, tonnage, filtrate clarity, washing efficiency and cost per ton — *in advance* of your investment in equipment. Why not make use of these unsurpassed test resources whenever *you* encounter a solids-liquids separating problem?

A corner of the test floor of the Bird Research and Development Center, showing the feed tank mezzanine. Feed and filtrate up to 2500 gallons are readily handled.

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For specific information on individual machines write Bird Machine Company, South Walpole, Massachusetts
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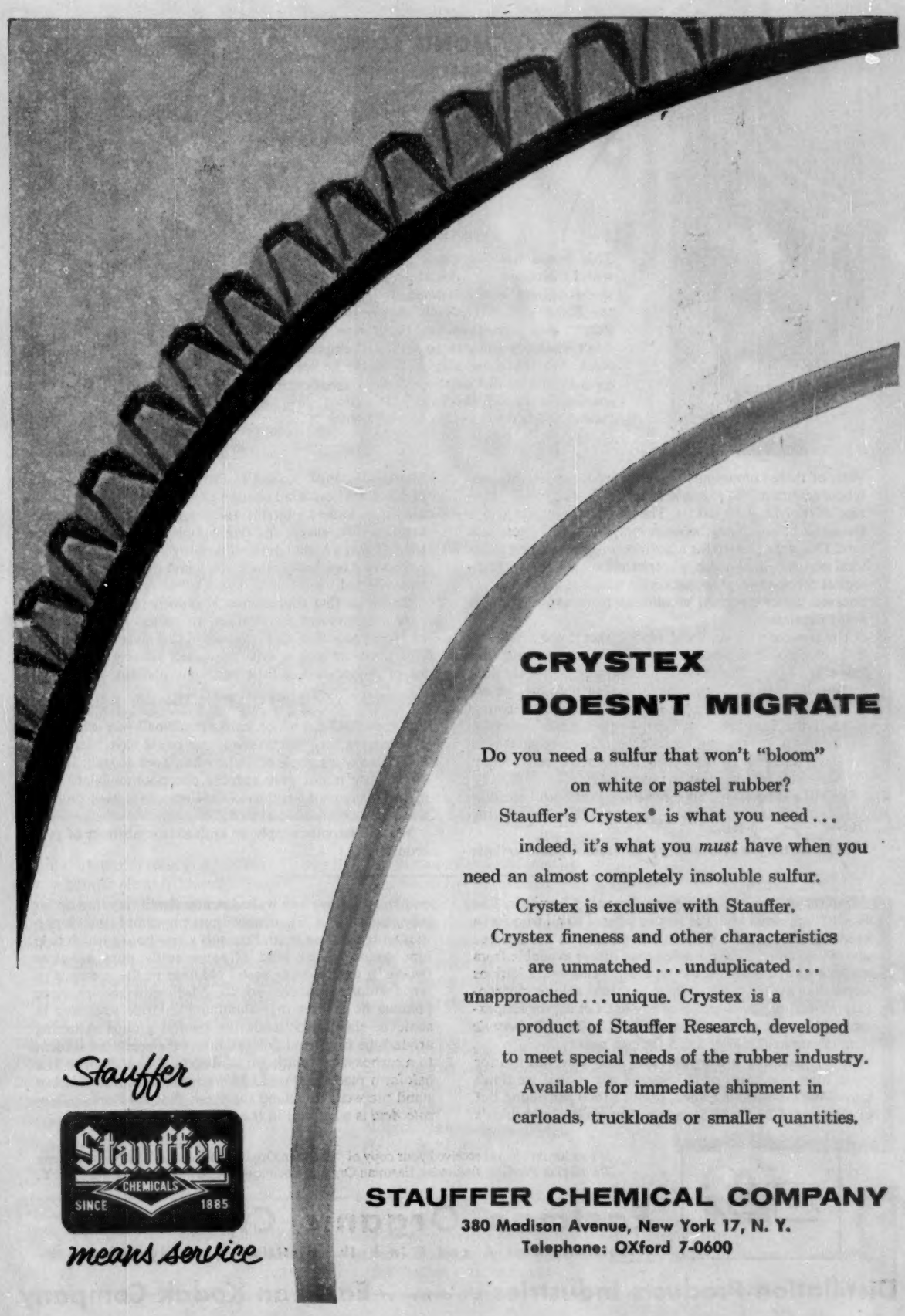

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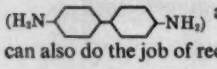
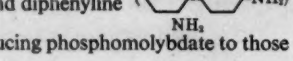
3500

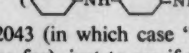
ORGANICS

This bottle has for many years supplied the world's biochemists with their *1-Amino-2-naphthol-4-sulfonic Acid* (Eastman 360, "ANS") for the Fiske and SubbaRow **determination of PO_4^{---} and phosphatase.** From now on, we don't think it's going to be filled and emptied so often. We think the play is going to be taken away from it by this bottle of *N-Phenyl-p-phenylenediamine Monohydrochloride* (Eastman 2043, "semidine" hydrochloride). We are glad.

Both of these compounds work by reducing phosphomolybdic acid to a blue pigment which is reputed to be a mixture of molybdenum oxides. The phosphomolybdic acid is the result of an affinity between molybdate and phosphate ions. This is the basis of the usual method of measuring either total organic phosphorus, phosphate ion itself, or that biological touchstone, phosphatase (in terms of the phosphate released under standard conditions from a glycerophosphate substrate).

The trouble with good old ANS is that it gives precious little blue color to measure unless you are working with amounts of phosphorus up in micrograms, and what little color you get is an evanescent thing. Furthermore, we are in a position to reveal that the soul can be tried in the course of purifying 1-amino-2-naphthol-4-sulfonic acid, preventing it from turning a nasty purple with the mere passage of the days, and politely answering irate letters from clinical chemists bothered by strange precipitates.

Now it has been written somewhere that both benzidine  and diphenyline  can also do the job of reducing phosphomolybdate to those blue oxides. Prof. Robert L. Dryer of the State University of Iowa has been kind enough to inform us that he and his associates looked into this and found neither does it very satisfactorily, except for one sample of diphenyline they tried. When a highly purified diphenyline failed to work as well as that one lucky sample, they laid down their cuvettes and reflected.

The idea that diphenyline is diphenyline is obviously only a convenient idealization. In pitiless chemical reality, you know that when you set out to make diphenyline, you wind up with a little unreacted starting material, a lot of diphenyline, a little benzidine perhaps, a touch of "semidine" (). So they bought some Eastman 2043 (in which case "semidine" was what they were paying for), just to see if this could have been what made that one sample of diphenyline work so well. It was. Apparently it not only reduces phosphomolybdate to a nice blue pigment but the oxidized reagent is itself brightly and conveniently blue as well.

We will happily supply an enthusiastic abstract of procedures.

A month or two ago "Eastman Organic Chemicals, List No. 40" appeared and was sent or offered to all who feel a need for a list of such organic compounds as are hawked above and some 3500 miscellaneous others available from a single source. Even as the type was being set, additions were being made. A few of these we were able to incorporate in a last-minute supplementary list. Let us, for fun, examine the most costly of these items, *2,4-Dimethylbenzoic Acid* (Eastman 7262) at $3.55 for one gram.

This is **actually a bargain.** Anybody who has use for more than one gram of it knows a secret that we don't know. We are speaking, then, not of $1600 per pound but of the sum of $3.55. $3.55 is less than it costs a chemist's employer to have him walk down to the library, fire up his pipe, exchange a few observations on school district politics with a colleague, and consult a few books which help him decide to get hold of some really pure m-xylene (where?), treat it with acetyl chloride in the presence of ferric chloride to convert to 2,4-dimethylacetophenone (assume he realizes that aluminum chloride suggested in some of the books sends the methyl groups skittering around the ring), and finally convert the acetyl substituent to a carboxyl by splitting it with sodium hypochlorite in a haloform reaction. For $3.55 we not only do all this but stand prepared to defend the thesis that *2,4-Dimethylbenzoic Acid* is what was in the bottle when we sealed it.

If you haven't as yet received your copy of "Eastman Organic Chemicals, List No. 40," write *Distillation Products Industries*, Eastman Organic Chemicals Department, Rochester 3, N. Y.

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OPINION

Wasted Talent

TO THE EDITOR: In your issue of Nov. 17, you write about the shortage of scientists and engineers, and you have certainly brought in a very critical but, likewise, a very controversial subject.

Let us consider this from two parts:

First, education:

The writer has been personally waging a battle with the various boards of education about the need for experienced scientists to teach in the secondary schools.

Teachers in our public school system do not study subjects; they study teaching methods. It is virtually impossible for anyone not having a certificate in teaching to teach in our public schools. Therefore, science is taught by people who, says the assistant superintendent of schools in Philadelphia, "take refresher courses in science in order to be able to teach these subjects." I ask you, how can anyone complete a course in chemistry or in physics or in engineering, and at the same time obtain a teacher's certificate? Yet, amazing advances in science and engineering have been made by men and women whose teachers did not have teaching certificates. . . .

Second, experience:

We are wasting in this country literally thousands of experienced scientists, because they reach the retirement age of 65. I know of three classmates to whom this is happening this year.

We recently elected a President at the age of 66; two former Presidents aided in the campaign in their 70s and 80s; we have innumerable members of Congress elected and serving long after they were 65. And yet, with our usual prodigality, we waste

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

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OPINION

the brains, experience and education of men [in industry] over 65, for the most part, to suit some pension plan that decrees that at 65 they are no longer of any use to industry. I think anyone will admit that this is both idiotic and wasteful.

The reason why Russia is training so many youthful scientists and engineers is that they do not have the reservoir of experienced men we have.

WILLIAM ALKUS
President
Richmond Oil,
Soap & Chemical Co., Inc.
Philadelphia

FDA Openings

TO THE EDITOR: The Food & Drug Administration has immediate employment opportunities for recent chemist graduates and chemists who have had experience in the development of methods of examination of foods or drugs.

Positions are available in the 16 field laboratories of the Food & Drug Administration and in its research division in Washington, D.C. The positions provide training in food and drug chemistry and ample opportunities for research in these fields. Initial pay is good and opportunities for advancement are excellent.

Positions are also available for food and drug inspectors who have training in the physical, natural or biological sciences.

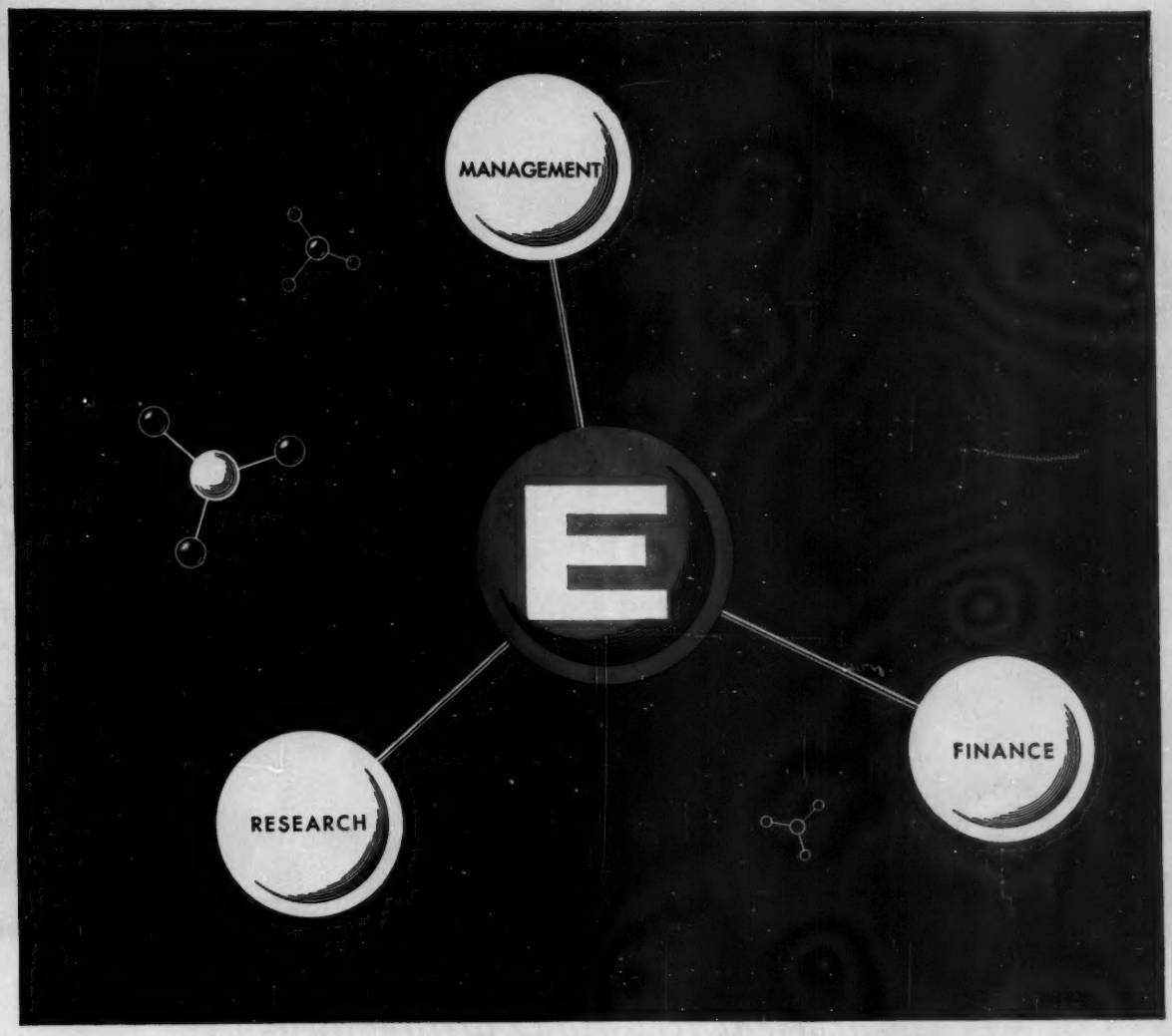
More information may be obtained and interviews may be arranged by contacting: Personnel Officer, U.S. Food & Drug Administration, Dept. of Health, Education & Welfare, Washington 25, D.C.

Unfortunately, the Food & Drug Administration cannot use funds appropriated by Congress to advertise its need for chemists or other employees. For that reason, we would appreciate it, as a public service, if you would carry this message. . . .

FREDERICK M. GARFIELD
Chief Chemist
Bureau of Field Administration
Dept. of Health, Education & Welfare
Washington 25, D.C.

Pesticide Plaudits

TO THE EDITOR: I . . . want to congratulate you on the remarkably complete summary of the pesticide industry. . . . I think it is so important that we are planning on send-



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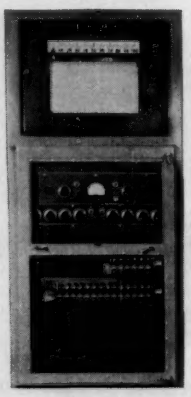

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ing a bulletin to all of our members, calling their attention to it, and getting a supply of reprints for future use. . . .

L. S. HITCHNER
Executive Secretary
National Agricultural Chemicals Assn.
Washington, D.C.

MEETINGS

American Institute of Chemical Engineers, annual meeting, Statler Hotel, Boston, Dec. 9-12.

American Nuclear Society, winter meeting, Sheraton-Park Hotel, Washington, Dec. 10-12.

American Pharmaceutical Manufacturers' Assn., midyear and eastern section meeting, Waldorf-Astoria Hotel, New York, Dec. 10-12.

Illinois Institute of Technology, air pollution control conference, Congress Hotel, Chicago, Dec. 13-14.

American Assn. for the Advancement of Science, 123rd meeting, Statler Hotel, New York, Dec. 26-31.

Society of Plastics Engineers, annual technical conference, Sheraton-Jefferson Hotel, St. Louis, Jan. 16-18.

Assn. of American Soap and Glycerine Producers, annual convention, Waldorf-Astoria Hotel, New York, Jan. 23-25.

Texas A&M College, 12th annual symposium on instrumentation for the process industries, College Station, Tex., Jan. 23-25.

American Institute of Mining, Metallurgical and Petroleum Engineers, annual meeting, Hotel Roosevelt, New Orleans, Feb. 24-28.

Chemical Market Research Assn., Sheraton Hotel, Philadelphia, Feb. 19-20.

Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Penn-Sheraton Hotel, Pittsburgh, March 4-8.

National Agricultural Chemicals Assn., spring meeting, Fairmont Hotel, San Francisco, March 6-8.

Nuclear Congress International Atomic Exposition, Convention Hall, Philadelphia, March 11-15.

National Industrial Conference Board, 5th conference on atomic energy, Benjamin Franklin Hotel, Convention Hall, Philadelphia, March 14-15.

Society of the Plastics Industry, annual conference and Pacific Coast plastics exposition, Shrine Exposition Hall, Los Angeles, March 18-21.

Commercial Chemical Development Assn., plastics meeting, Statler Hotel, New York, March 27-28.

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SHELL

Business Newsletter

CHEMICAL WEEK
December 8, 1956

Let's look at American Cyanamid.

Cyanamid President K. C. Towe last week gave a broad outline of company operations to security analysts in San Francisco that—unlike many such reports—went well beyond the dry financial figures. Highlights:

Cyanamid's 50-million-lbs./year acrylonitrile operations at Fortier, La., on which the company had hoped to make money during '56, is now "approaching the break-even point." The planned doubling of the plant by 1958 "should result in a worthwhile reduction in unit costs." Cyanamid's "relatively obsolete" acrylonitrile unit at Warners, N. J., is now in stand-by.

But another Fortier project—the manufacture of methyl styrene—is in less comforting shape. "Largely mechanical" troubles with the process for making the acetylene-base resin intermediate have delayed production and sale of methyl styrene-base polymers and copolymers.

Cyanamid still has faith in the market for acrylic fibers, Towe reported during a question-and-answer session. He reported some "bugs" in its fiber production process should be ironed out within the next year. Its 27-million-lbs./year Florida plant to make Creslan fiber is scheduled to be producing by late '58. (Incidentally—though Towe didn't report it—William Creswell, for whom the fiber was named, has left Cyanamid.)

Companies that account for more than half of the poultry processing capacity in the U.S. are now franchised to use Cyanamid's Acronize process for antibiotic treatment of poultry. Other countries have okayed the usage on other food products. Antibiotic sales for such usage are already in the million-dollar range, though the program, because of sales promotion costs, "can hardly be regarded as a highly profitable item for immediate near-term appraisals."

Will Cyanamid expand antibiotics capacity during its two-year, $100-million capital expansion program (*see p. 21*)? Towe was not specific on this, but he did forecast continued expansion of antibiotics sales overseas.

Cyanamid has "farmed out" several design-construction projects to Chemical Construction, which it sold in July to Electric Bond and Share. Rights to Chemico's chemical techniques for recovery of metals, by the way, were not sold to Electric Bond. "The near-term outlook for substantial profits from these developments cannot be regarded as of special significance at the moment."

How do Cyanamid's annual sales break down by divisions? Lederle sales are running at about a $120-million rate; organics, over $80 million; inorganics, more than $70 million; plastics and resins, just over $45 million. Sales of agricultural chemicals, about $50 million in '55,

are up 10% in '56; fine chemicals, $32 million in '55, are up about 60%; miscellaneous sales (which include pigments and Formica laminates) may run a bit below $90 million.

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A $435,000 legal suit has been filed against Virginia-Carolina Chemical Corp. by its former president, Joseph Howell, in law and equity court at Richmond, Va. Howell claims that the company did not live up to terms of a 10-year contract—approved by company stockholders—which had several more years to run at the time he was ousted from the presidency by a group of insurgent stockholders. The company declines comment until it can prepare an answer to the suit. The answer is due by Dec. 19.

Legal questions over that Freeport Sulphur-Humble Oil Sulfur agreement, meanwhile, are more undecided than ever. Last week, the Interior Dept. issued new rules for sulfur leases that, had they been in effect earlier, would have barred granting of the original federal sulfur lease to Humble. There's still a chance that the principle the government used in setting up its new rules—that one firm can't get a lease on both oil and sulfur on the same leasehold—may be used to disapprove a transfer of Humble's lease to Freeport (*CW Business Newsletter, Oct. 13*) rather than relying on the question of whether such a transfer would tend to increase monopoly. The Justice Dept. has been formally asked for an opinion on the transfer question. An answer could come within two or three weeks.

Mexican sulfur competition with U.S. producers—one of the points Freeport stresses in defending its proposal to exploit the Humble lease—has come in for criticism by a Mexican congressman, Manuel Villa Atayde. In a speech last Saturday, he pointed to profits that have gone to foreigners, reported that Mexico loses millions of pesos annually because of foreign operation. He stressed that while sulfur deposits there should be developed, Mexican capital should be invested in the industry.

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Plant site news—Wyandotte chemicals will mine diatomaceous earth at Lompoc, Calif. The firm has purchased a 242-acre site, will strip-mine the earth and process it to produce an absorbent product for floor cleaning that will be sold by the firm's J. B. Ford Division.

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Hercules Powder has completed its acquisition of Huron Milling Co., to be operated in its Virginia Cellulose Dept.

And Witco Chemical has acquired all the stocks in Ultra Chemical Works (Paterson, N.J.) in exchange for shares of its own. Witco had previously owned a half interest in the detergent-synthetic organic chemical producer.

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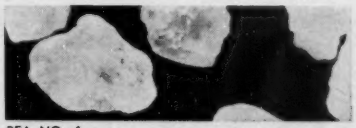

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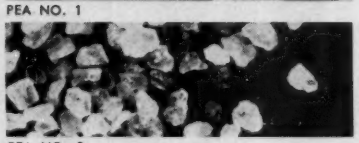

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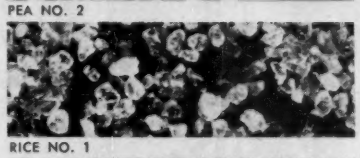

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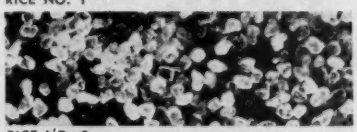

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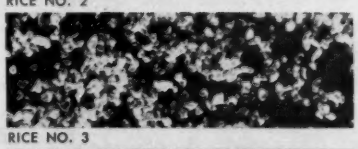

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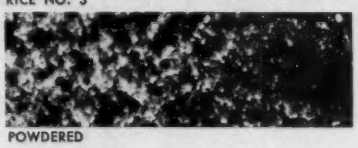

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"Although the long-term growth prospects for the chemical industry are unquestionably still promising, many investors are now soberly reappraising the immediate outlook for this industry in the light of recent earnings reports."

"Among the industries that showed downtrends in profit margins were some of the major growth businesses . . . chemicals and petrochemicals, paper and drugs."

"Certain realities are dictating an 'agonizing reappraisal' of the [chemical industry's] unusually high price/earnings multiples."

"Our investment committee [recommends] the placing of approximately 11% of Delaware Fund's assets in steel stocks and less than 3½% in chemicals."

"Industry sales growth [for chemicals] may be decelerating; competitive forces are strengthening; chemical profits are leveling."

"The top-flight, general line chemical companies may be approaching a point of diminishing return on capital investment."

Falling Out of Love with Chemicals

Wall Street is falling out of love with chemicals. Many investment advisors, instead of talking about long-term growth prospects of the chemical industry, are emphasizing the pinch on profit margins that became painfully evident in many chemical firms' third-quarter earnings reports (CW, Oct. 10, p. 22).

The comments printed above are taken from various investment advisory services, and, though they probably don't yet represent a majority opinion of Wall Street sources, they are heard enough to worry many chemical financial men, especially those whose companies will need to get outside financing for future expansion.

What do industry men think? The comments range from one vice-president's "Wall Street is fickle. It's always falling in love or out of love with chemicals" to a treasurer's "When we made an estimate of what money would cost us next year, we had to scale back our plans. At these prices, we can't afford to build capacity that may stay idle until late in 1959."

Middle Road: But many of those to whom *CW* talked take a moderate view. They see a continuing substantial demand from pension funds, other such investors, for debentures. They admit, however, that they're not happy when they think of what they'll have to pay for such aid.

Market Bypass: To some companies, of course, market conditions aren't too important, since they derive much of their needed expansion money from current operations. American Cyanamid's K. C. Towe, for example, told security analysts in San Francisco last Thursday that his company isn't likely to need outside help in financing the $90-100-million expansion program now planned for 1957 and '58.

On the other hand, some process industry firms have substantial plans for outside capital. Socony Mobil Oil last week revealed that it may sell up to $234 million worth of common stock and some $100 million in debentures early in '57. Few companies' plans are so ambitious—but many are equally important when relative corporate sizes are considered.

Fickle How Long? In making plans, should chemical men plan to sell stocks and bonds early in '57, or wait until later in the year? At least one chemical stock specialist feels that, though much of Wall Street may now be out of love with chemicals, the "smart" money—anticipating that the current round of chemical price hikes will bring profit margins back to earlier levels—is already back in the market for chemical stocks.

Water Worry Looms Again

Electrochemical producers in the Pacific Northwest were worried again over the possibility of power curtailment.

That was the word from the Bonneville Power Administration, which has previously run both wet and dry in supplying interruptible-contract power to various industries.

All firm and interruptible power commitments, supplied in November —though not in October—may not be supplied this month. Said Bonneville Power Administrator William Pearl: "Sufficient hydro reserves have not accumulated to date to assure carrying interruptible load throughout the month of December."

Though flow on the Columbia River has been almost double the minimal flow and has even been slightly ahead of average flows at both Bonneville Dam and Grand Coulee.

Long-Term Outlook: But on a longer-term basis, outlook for power users on the Columbia River area may hinge on forthcoming U.S.-Canada negotiations over water use. The negotiations will consider present Canadian plans to divert water from the Columbia River into the South Thompson-Fraser River system for the purposes of power generation, and from the Kootenay River into the Columbia, at points in British Columbia.

In each case, the diversion would be carried out, the Canadians say, only during periods of overnormal waterflow; such water would then be stored for later use in Canada.

Reason for U.S. objections to such plans lies in a treaty signed in 1909 with Canada that establishes a joint group to regulate use of water that flows between the two countries. Canada contends that it has the right under this treaty to divert the water it needs; but the U.S. says the Canadian position is legalistic, that by building dams to store and equalize U.S. waterflow down the Columbia, production of power from existing dams such as those at Bonneville and Coulee could be stepped up without having to install new generating equipment.

But to Canadians, the two proposed diversions — especially that from the Columbia to the Fraser— look more and more attractive. With power in the Pacific Northwest becoming more expensive, the prospect of power development on the Fraser at rates extremely competitive with —in some cases, lower than—the best hydroelectric power rates available today, Canada may go ahead despite U.S. objections.

Married on Schedule

The long-awaited consolidation of Hooker Electrochemical Co. and Oldbury Electro-Chemical Co. became effective last week after stockholders of both companies voted to approve the merger, effective Nov. 30.

On the exchange of stock, which consummates the deal, Oldbury shareholders, who voted 100% in favor of merger, will receive 45 shares of Hooker common for each share of Oldbury. Holders of nearly 90% of Hooker's common and preferred stock approved the consolidation.

The acquisition, Hooker's third within two years, will mark a further broadening of an already-extensive line of basic organic and inorganic chemicals (*CW, July 21, p. 27*). In addition, it should mean almost a tripling of Hooker sales in just three years—the company's sales for the 12 months ending in Nov. '53 were $38.7 million.

Next Battle: Wage Inflation

The fight against "wage inflation" will be one of the biggest jobs of chemical process manufacturers in the next several years, members of the Rubber Manufacturers Assn. were told last week at their annual meeting in New York City (see also p. 87).

Economist David Murray Shields made the point in a question-and-answer session of the meeting, during which top executives of the nation's rubber producers made it clear they are worried about declining profit margins. Mainly, Shields emphasized that a manufacturer's best way to keep a reasonable profit margin is found in increasing capital expenditures to install labor-saving equipment.

ECONOMIST SHIELDS: To get cash for expansion, talk up opposition.

However, he said, "to the extent manufacturers can't fight wage inflation with technological improvement, the differences must be made up by increased prices." Only good profit margins, he continued, can supply the cash generation needed to expand investment—especially since neither depreciation allowances nor capital sources are sufficient to do the job industry will require.

Among other things, Shields figures, industry should talk up opposition to annual wage increases on the grounds that it is unhealthy with respect to increasing employment and providing stable employment. He thinks, too, that the U.S. government should back up industry's efforts with stronger emphasis on the deleterious aspects of wage inflation on the nation's business. Government has already brought some pressure on labor, but is capable of bringing far more, said Shields.

In his formal speech, he forecast 1957 gross national product to hit a record $430-435 billion, but expected that the over-all pace of U.S. business will slacken toward the end of the year. In 10 years, he predicted, GNP will approach $600 billion.

'Tax Death' Threat Looms In Baltimore

Most chemical men who supervise local operations for their companies would get butterflies in their stomachs if city officials proposed a property tax on manufacturing inventories and equipment, but refused to be specific about rates, coverage or how long it would last. This week, executives of companies that operate in Baltimore, Md., were mobilizing to combat just such a threat.

BLAKESLEE-LANE

DAVISON'S MCGUIRK: Millions were spent on an assumption.

GLIDDEN'S JOYCE: 'We came because the law was forward-looking.'

Crux of the situation is the city's need to raise an additional $13 million to meet larger budget estimates. To do it, Mayor Thomas D'Alesandro, Jr., and the city council, have proposed such a tax on all manufacturing operations within the city at a rate to be determined after assessments of inventories and equipment.

D'Alesandro's proposal is not new. In 1953, after the Maryland legislature had abolished a 70-year-old statute that effectively exempted manufacturing equipment and machinery from taxation and had passed laws permitting municipalities some autonomy in their choice of levy targets, D'Alesandro also tried to eliminate such exemptions, although at the time there was not so much pressure for new funds. Then, manufacturers rose up and defeated the attempt. They hope to do so now.

Alternative: Almost to a man, opponents of the new proposal would rather see the $13 million raised by an across-the-board real estate tax. Even the members of the city's real estate board concur with this, despite the fact that if all the money came from real estate taxes it would raise tax rates from the present $3.13 to $3.33 per $1000 of assessed valuation.

The mayor and his council are up against formidable opposition. Besides the 237 manufacturers on record against his proposal, the city's banks (usually spectators when it comes to political matters), the hotel association, the chamber of commerce, and organized labor have all voiced disapproval. Supplementing the efforts of the commerce association, a citizen's committee has been formed, has retained the services of prominent Baltimore attorney Clarence Miles. Last week, he talked with D'Alesandro, sought clarification of the meaning of terms used in the proposal. Later, Miles and the city council's finance committee met to discuss the same question, as well as some alternative proposals. The citizens group urged adoption of occupational, hotel-room and parking-lot taxes, which would be equivalent to some 8¢ of the otherwise-required 20¢ increase in tax per $1,000 of assessed property value. This would put the over-all Baltimore real estate tax rate at $3.25, not $3.33.

Broad Statements: Plaguing efforts of the opponents in making specific arguments against the tax is the nebulousness of intended coverage. So far, the mayor's proposal is aimed at "manufacturing inventories, machinery, bills payable and credit instruments," though there's been no definition of what is meant by inventories or machinery.

Chemical men fear the terms mean all equipment—new, used and in salvage—and raw materials, goods in process and finished materials, classifications that would work particular hardships on high-volume, continuous-process manufacturers.

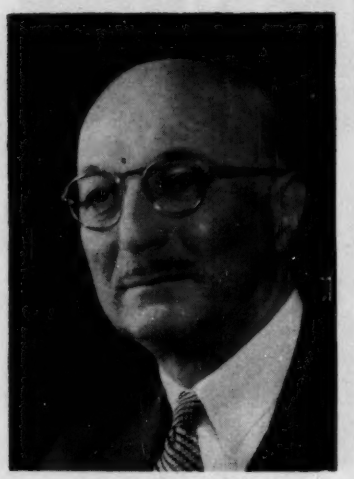
City officials admit that there may be changes in their proposal. City Solicitor Thomas Biddison concedes that since Baltimore has no power to tax accounts payable or receivable, the proposal may be partly illegal. He says that as finally drafted, the first $15,000-25,000 of assessed inventory and equipment might not be covered by the tax.

In hearings before the city council last week, Davison Chemical's President William McGuirk, Jr., voiced the feelings of most Baltimore chemical processors. Pointing out that the company's employment has nearly doubled through its expansion within the city, he said: "Repeal of [the tax exemption] will definitely stop further expansion and will seriously cripple our annual production of 600,000 tons of fertilizers, on which a very low margin of profit is realized."

Glidden President Dwight Joyce echoes McGuirk, says that the manufacturers' tax exemption influenced the company in favor of settling in Baltimore, but that repeal of "this forward-looking law will be greatly detrimental to the city, its industries and its people."

Other chemical managers have stepped forward, too. Olin Mathieson Assistant Treasurer Tilton Dobbins says the company would consider moving its facilities to other locations; Resinol Chemical's LeRoy Carter affirms this stand. Noxzema Chemical's George Bunting and Schenuitt Rubber President Roy Neely feel that the increased taxes would keep new industry away.

Already Happened: Testimony given before the commerce association says that one large manufacturer proposing to build in the city has, in fact, abandoned its multimillion-dollar plans, while a number of others have at least



New Italian Envoy

A TOP chemical process industry executive will leave to take over a high government post. He is J. D. Zellerbach, board chairman and former president of Crown Zellerbach Corp., who has just been named ambassador to Italy.

While the appointment won't be official without approval by Congress, confirmation is virtually certain to be one of the first orders of business taken up when the new Senate convenes in January.

Enthusiastic approval came from officials in Italy. Said Italian President Gronchi, "We are delighted . . . [Zellerbach] is well known and well liked" in Italy and in diplomatic circles. Zellerbach, a former administrator of Marshall Plan aid to Italy, lived there from 1948 to 1950.

Meanwhile, his brother, Harold Zellerbach, former executive vice-president of CZ, moves to chairman of the firm's executive committee. To fill the two top posts, directors elected Alfred B. Layton president and Reed C. Hunt executive vice-president.

Layton and Hunt, both long-time employees, are the company's first chief executives outside the Zellerbach family, which founded the firm in 1870 and has since provided all the top, policy-making executives. Said J. D. Zellerbach, "It reflects CZ's change from a one-time family enterprise to a public corporation."

pulled back until they see which way the wind's blowing. For the most part, such manufacturers are primarily interested in a permanent, not temporary, withdrawal of the proposal.

Break for Homeowners: Mayor D'Alesandro, in making his overture, said that property taxes have risen steadily in recent years and that a special exemption shouldn't be given manufacturers under such conditions. He said homeowners deserve a break.

Labor leaders, whose constituents include a good many of Baltimore's taxpayers, countered D'Alesandro with the argument that their members are better off paying a few dollars extra per year in real estate taxes than they would be in losing their jobs when either permanent or seasonal industry dried up.

There isn't much question but that Baltimore businessmen are steamed up over the new proposals. Short of torchlight parades, they're mobilizing rapidly and efficiently to pit themselves against what they consider a real threat to their industries. How they fare remains to be seen; but whatever the outcome, it's a sure bet they're learning some healthy lessons in fighting high taxes.

Britishers Say 'Yes'

It's now a certainty that Britain will join with at least 11 other nations in a European "free-trade zone." The decision, which was not unexpected (*CW, Oct. 27, p. 21*), may put U.S. exporters under more of a disadvantage in selling to Europe. British participation was the only substantial question to be answered on formation of the European common market.

While Britain will keep the tariffs on agricultural products now imported from countries other than the British Commonwealth, it will gradually relax duties on manufactured goods coming from nations that belong to the free-trade group.

Common Goal: Goal of the new program is to create a common market for European products that will consist of about 250 million consumers. Participating, in addition to Great Britain, will be the six countries making up the present European Coal and Steel Community along with five other nations. France, Italy, Belgium, Holland, Luxemburg and West Germany will thus be joined by Sweden, Denmark, Norway, Austria and Switzerland. Other members of the 17-nation European Economic Cooperation Organization are also eligible to join.

Each country will begin lowering tariff barriers next year and continue this until, at the end of a 10-year period, all shipments of manufactured goods (between member countries) will be duty-free.

Industry Surveyed: Britain's decision quickly follows a report prepared by the Federation of British Industries.

In the report (prepared for industry), FBI tabulated opinions from 287 British trade associations and 527 independent firms on whether Britain should go ahead with plans to join the free-trade organization. Though most tradesmen wanted to know more details of the proposal, consensus overwhelmingly supported the idea.

Main opposition came from paper and paperboard manufacturers, who fear stronger-than-usual competition from member countries. Chemical firms favored the proposal by a 3-to-1 majority; rubber manufacturers, 10 to 1; manufacturers of metals and metal goods, 9 to 1.

Approval, qualified only in that "safeguards" should be worked out, came from four groups in the chemical field—the Assn. of British Chemical Manufacturers, the Assn. of British Pharmaceutical Industry, the Fertiliser Manufacturers' Assn. and the British Plastics Federation.

The Assn. of Fatty Acid Distillers "does not oppose" further negotiations, assuming that safeguards are worked out; the White Lead and Lead Oxide Convention is "opposed, unless" safeguards are assured. The Federation of Gelatine and Glue Manufacturers is unconditionally opposed to free-trade zone negotiations.

EXPANSION

Silicon Carbide: Canadian Carborundum Co. Ltd. will enlarge its silicon carbide production facilities at Shawinigan Falls, Que.

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Intermediates: Ott Chemical Co., a newly organized firm will build a $300,000 plant at Muskegon, Mich., to manufacture drug intermediates and fine chemicals.

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Ammonia: Ammonia Chemical Corp. of California will build a $5-million anhydrous ammonia plant

Washington Angles »

» Expect a push for small-business tax aid next year. Commerce Secy. Weeks told businessmen in New York last week that the Administration will push three tax measures in '57 that will be of special aid to small concerns:

1. A reduction in tax on the first $25,000 of a company's profits from 30% to 20%.

2. An extension of present depreciation rules to cover used equipment as well as new equipment.

3. Allowing estate tax payments to be deferred as long as 10 years.

How are chances that these will go into effect in '57? Not too good. It's doubtful that cuts in taxes affecting small business can be considered without opening the entire present tax structure to a review. And this would take time, could delay final action until '58.

» Chemical patent processing will be speeded by the turn of the year. Early in January, the U.S. Patent Office will start operating a mechanized "searching" system to scan existing patents for claims conflicting with newer patent applications.

The system will allow examiners to do in eight minutes what amounts to a day's worth of patent searching.

» Proposals to tighten federal narcotics laws will be discussed by top legal brains of the pharmaceutical industry next week. Drug company lawyers meet Dec. 11 with Narcotics Commissioner Harry Anslinger to talk over the Anslinger-sponsored Karsten bill—a sure bet for Congressional action next year.

Manufacturers will try to talk Anslinger into toning down provisions in the bill requiring a federal license to make synthetic narcotics and imposing government-established quotas on the amount each licensed producer can sell.

Anslinger, though agreeing to industry requests for a meeting, isn't expected to yield much ground.

» Hopes are slim that the 10% tax on cosmetics can be ended next year. Industry representatives pleaded these causes at House Ways & Means Committee hearings last week. But Asst. Treasury Secy. Dan Smith told congressmen that the administration will seek a blanket one-year extension of all excise taxes due to expire April 1. Bets are that Congress will go along.

One ray of hope shone through for some manufacturers when Smith hinted that the Treasury may go along with separate legislation exempting petroleum jelly and several other materials now subject to cosmetics excises. Rep. Sid Simpson (R., Ill.) will again sponsor such a move.

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near Huron in Fresno County, California. The plant is expected to process 5 million cu. ft./day of feedstock gas, will go onstream late next year.

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Pulp and Paper: Ellis E. Patterson and Associates has bought an option on several thousand acres in northwest Saskatchewan as a site for a new 300,000-ton/year sulfate pulp mill. Reported cost: $30 million.

• Crossett Co. will expand and modernize its pulp and chemical facilities at Crossett, Ark., by early '58. Cost: $5 million.

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Perlite: Zonolite Co. will expand perlite facilities at Atlanta, Ga.

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Paper Products: Fibreboard Paper Products Corp., formerly Pabco Products, Inc., will spend an average of $10 million/year over the next five years on expansion. Most of the money will be allocated to the company's paper products divisions.

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Phosphoric Acid: Coastal Chemical Corp. has received final go-ahead from Jackson County, Mississippi, voters to build a multimillion-dollar phosphoric acid plant at Pascagoula. Approved was a $750,000 bond issue for partial financing of plant development costs under provisions of the state's balance agriculture with industry (BAWI) program.

COMPANIES

Eagle-Picher Co. has purchased the assets of the Chicago Vitreous Corp. in a cash transaction.

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Air Products, Inc., shareholders have authorized an increase in common stock from 1,010,000 to 1.5 million shares in order to purchase the assets of Steele Gases, Inc., Chicago producer of oxygen, acetylene and other industrial gases.

FOREIGN

Ammonium Sulfate/Australia: Electrolytic Zinc Co. of Australia has started producing 55,000 tons/year of ammonium sulfate at its new $11.2-million plant at Risdon. Company officials hint that Electrolytic will eventually boost annual output to 155,000 tons.

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Synthetic Rubber/Ireland: Du Pont's newly established British subsidiary will build a "multimillion-dollar" neoprene plant near Londonderry. Construction will get under way in '57.

•

Fertilizer-Heavy Water/India: Vitro Corp. (New York) will engineer the heavy-water installation for the Indian government's $46-million ammonium nitrate, heavy-water plant at Nangal.

•

Cellulose/Brazil: Panamericana Textil S.A. will build a $14-million factory in MogiGuacu to process cellulose into paper and rayon yarn. About half the financing will come from foreign investors.

•

Paper/Pakistan: Pakistan Industrial Development Corp. will build a $20-million newsprint plant near Khulna, East Pakistan. The new mill is scheduled to turn out 23,000 tons of newsprint and 12,000 tons/year of mechanical printing paper from gewa wood.

Harshaw

ALUMINUM ISOPROPYLATE

(DISTILLED)

EFFICIENT INTERMEDIATE IN MANY REACTIONS SUCH AS:

1. Meerwein-Pondorf Reactions
2. Alcoholysis and Ester Exchange
3. Formation in situ of Aluminum Soaps
4. Synthesis of higher Alkoxides, Chelates and Acylates

Properties

Formula Weight	204.23
Melting Point	118° C.
Boiling Point	145° C. at 7 mms.
Appearance	White Solid
Purity	99.7%

Soluble in benzol, chloroform, carbon tetrachloride, petroleum hydrocarbons, isopropanol. Easily hydrolyzed and alcoholized.

Make Harshaw your source for this useful intermediate which holds great promise as a building block in a host of reactions. Aluminum Isopropylate is the first in a series of Aluminum Chemicals offered by Harshaw for new exploratory research.

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BRANCHES IN PRINCIPAL CITIES

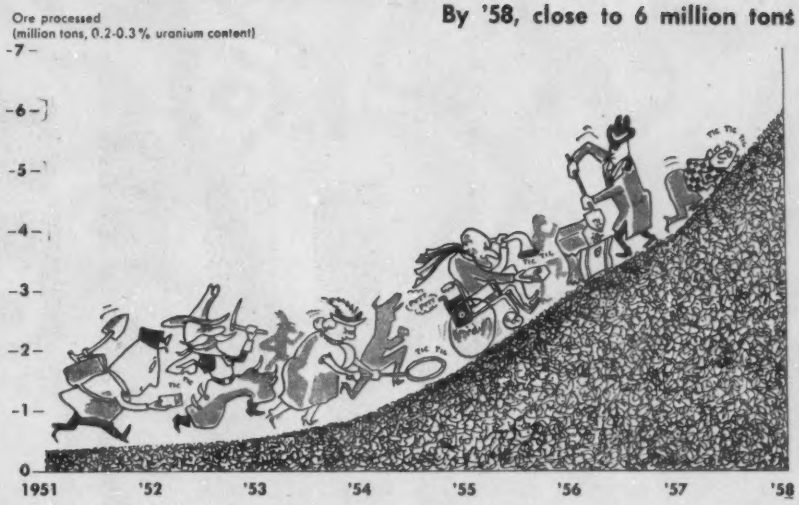
HARSHAW

Charting Business

CHEMICAL WEEK
December 8, 1956

U.S. URANIUM ORE OUTPUT:

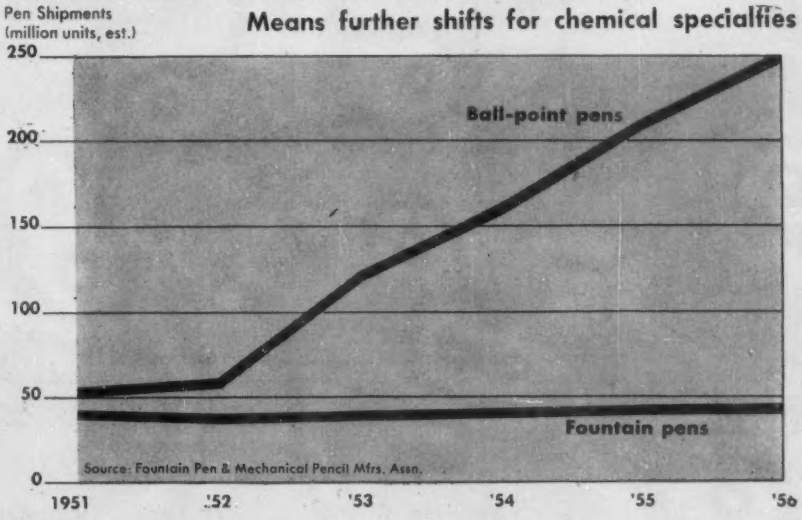
By '58, close to 6 million tons



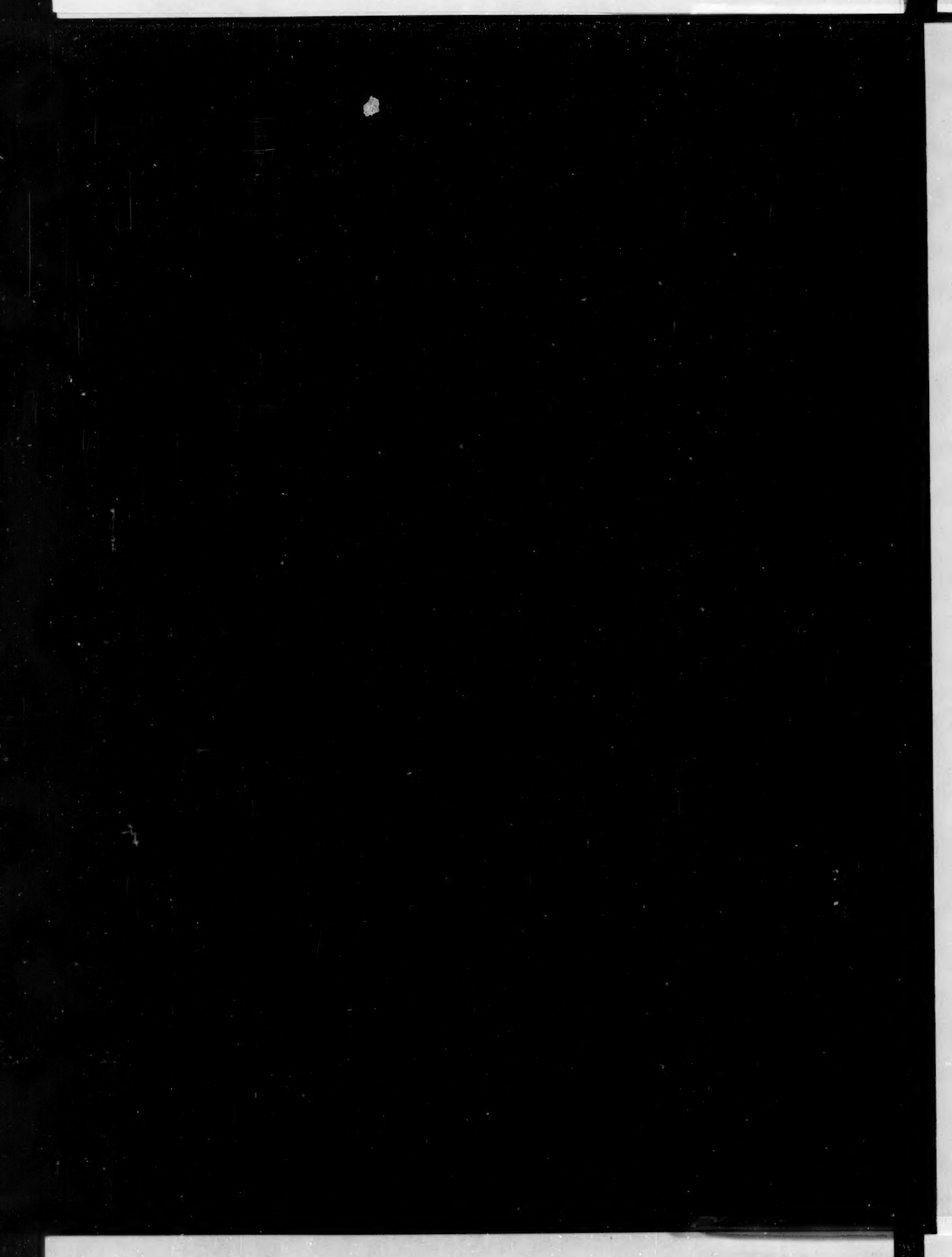
IN 1958, as a result of extensive government backing, both financial and technical, an impressive 6 million tons of uranium ore will be mined—double the estimated '56 production. With more than 900 uranium mines in operation in the U.S., known reserves of this precious ore today total 30 million tons, with an additional 30 million tons assumed. Known free-world reserves of uranium: 0.5 billion to 1 billion tons of 0.2-0.3% ore.

NEW MARK FOR BALL-POINT PENS . . .

Means further shifts for chemical specialties



WHILE fountain pen shipments manage to maintain an even keel, ball-point pens continue to forge ahead —today they account for over 80% of mechanical writing equipment, may well hit a 250-million-unit peak this year. Ball-point pens are a strong outlet for chemicals, especially plastics (nylon, styrene alloys, styrene copolymers, polyethylene, etc.), and will consume about 4 million lbs. of these polymers this year. Other chemicals consumed in '56; more than 500,000 lbs. of paste ink, 150,000 lbs. of dyes, as well as resins, solvents.



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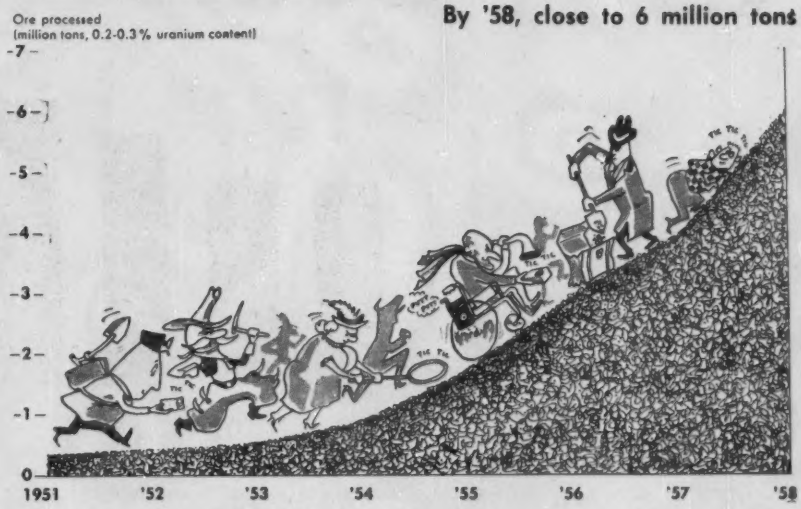

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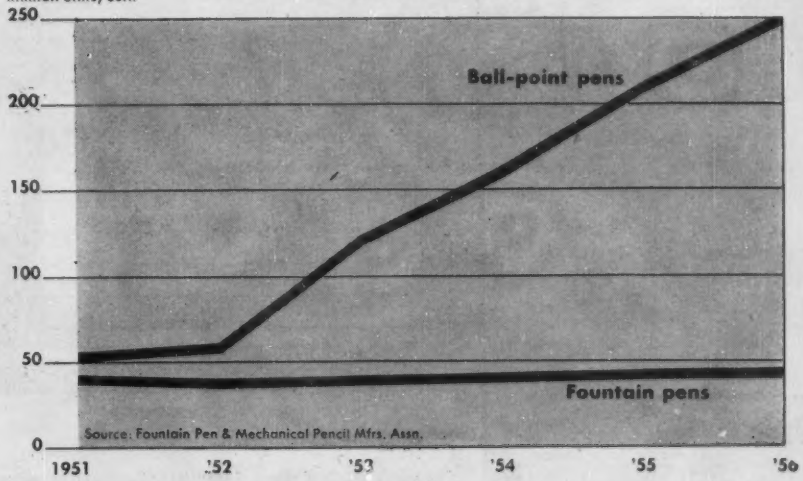

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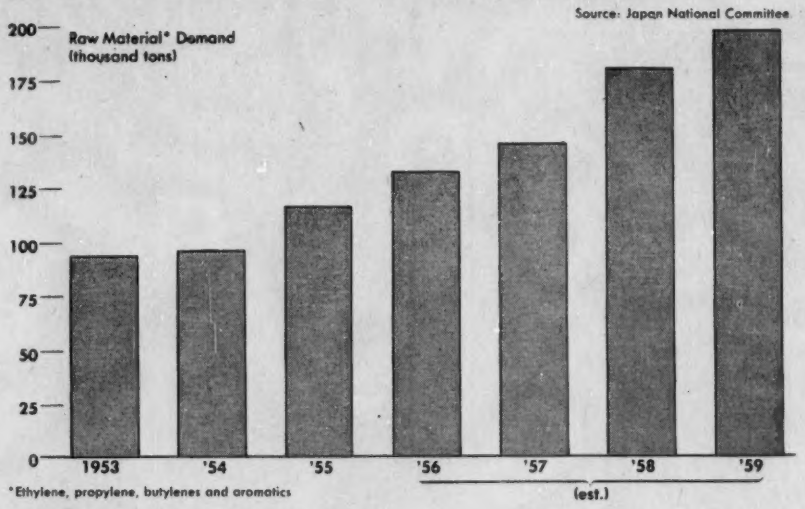
Charting Business

(Continued)

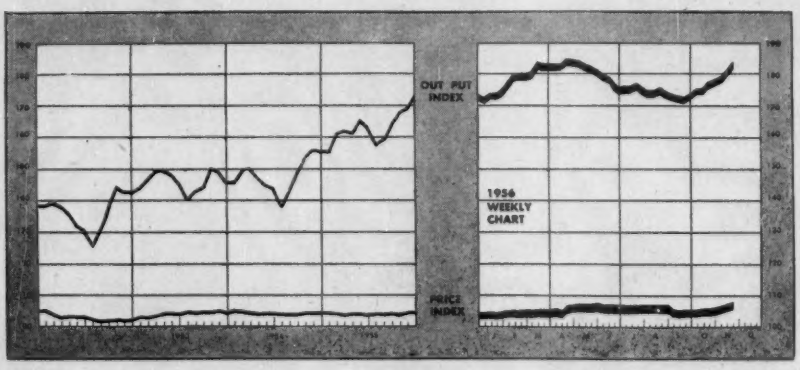
JAPAN'S PETROCHEMICAL NEEDS ARE RISING



JAPANESE industries — especially plastics, paints, textiles, and dyestuffs —are today consuming petroleum-derived chemical raw materials at an unprecedented rate of more than 132,000 tons/year.

Indicative of Japan's ambitious expansion plans: by 1959, the country will need close to 200,000 tons/year of basic petrochemicals (aromatics, 66%; ethylene, 17%; propylene, 10%; butylenes, 7%). Significantly, all this increased demand will be met by present and planned domestic plants.

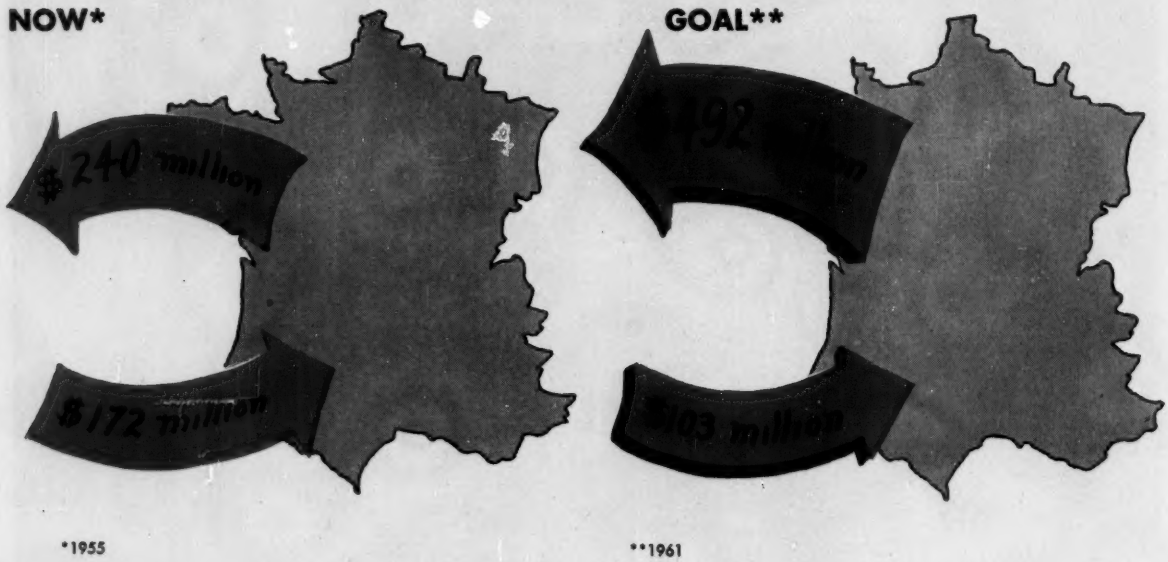
BUSINESS INDICATORS



WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	184.5	183.3	171.5
Chemical Week Wholesale Price Index (1947=100)	107.2	106.9	104.8
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	409.1	410.0	477.3

MONTHLY Production (Index 1947-49=100)	Latest Month	Preceding Month	Year Ago
All Manufacturing and Mining	150	146	147
All Chemical Products	184	176	176
Industrial Chemicals	200(e)	193	192

France drives for more chemical exports, fewer imports



New Balance of French Chemical Trade

U.S. chemical exports to France may well be in for drastic cuts by 1961 as a result of a new five-year modernization plan currently being formulated by the French government with the assistance of private industry, trade unions and professional groups.

While actual goals for specific industrial segments have not been established, industry generally is to be called on to increase production by 35% over 1955 figures, and one commissioner working on the chemical industry segment of the plan has predicted a 50% reduction in chemical imports and a doubling of chemical exports over 1956 figures by 1961.

As a means of obtaining the desired rise in industrial production, government commissions preparing various sections of the plan—actually the third French plan, although previous modernization attempts lasted only four years each—are working within a general framework calling for the following programs:

- Increased production through better use of existing equipment.
- Expanded productive capacity through new equipment and plants.
- Professional training to increase the number of skilled workers.
- Development of new production units to supply products that now must be imported—such as synthetic rubber, plastics, man-made fibers, compounds of rare metals, and pharmaceutical products.
- Development of industries that can export their products.

Of almost equal importance to the desire to cut imports is the last named point, which—if successful—would mean a greatly stimulated French export program. Naturally, any such accomplishment would cut into U.S. exports to other countries.

No Financial Aid: The advantages the French chemical industry will gain from the five-year plan will not include financial aid from the government. In the past, the small amount of money that has been allocated to the chemical sector from a government modernization fund—in the form of long-term, low-interest loans—has gone almost exclusively to wholly or partly government-owned enterprises.

What the chemical industry will gain from the plan is a long, clear look at the perspective for each sector within all French industry. Plan officials are concentrating on interindustrial aspects, and the final plan is expected to integrate expansion plans in terms of available raw materials, power and workers, and projection increases in domestic consumption and exports.

Past Financial Aid: The slight government financial aid that did get through to private chemical companies during the two previous modernization plans went into such products as fertilizers, nitrates, chlorine, sulfuric acid, phenol, carbides, and in general to the basic chemicals industry. In '49—first year of government aid—765 million francs ($2 million) went to private chemical firms, but since '53, virtually none of the aid has gone to these companies.

But this lack of government aid has not significantly slowed expansion by French chemical companies. Financing out of their own resources, bond issues, bank loans and increases in capital investment, chemical companies have managed to raise funds for investment programs. In the chemical industry alone—not counting glass and rubber industries—total gross investment was 53 billion francs

THESE U.S. EXPORTS TO FRANCE MAY DROP OFF DRASTICALLY

	(million dollars) 1955	1956 (1st 8 months)
Coal-tar products	$2.6	$2.7
Medicinal, pharmaceutical preparations	3.8	1.8
Chemical specialties	14.5	14.8
Industrial chemicals	4.3	3.5
Pigments, paints, varnishes	9.0	6.7
Soap, toilet preparations	0.07	0.03
Total	34.2	29.5

(approximately $136.7 million) in 1952, 60 billion (about $154.8 million) in 1955, and an estimated 66 billion francs ($170.3 million) in 1956. These investment figures have represented about 12% of the industry's gross operating revenues in each year.

Off to a Good Start: The fact that plastics production has more than doubled from 1953 to '55 and production of petrochemicals has almost tripled within the same period indicates that the chemical industry is already off to a good start toward realization of some of the goals. And within the past year, several leading chemical companies have announced projects that will inevitably cut into imports. Several of the new projects involve participation of U.S. companies.

U.S. exports to France are sizable (*see table above*), but indications are that by 1961—assuming a reasonably successful five-year plan—these exports will have been reduced considerably and French exports will be a much more important factor in European markets. Some U.S. chemical manufacturers indicate that subsidiary operations in France is one solution—one that's being employed more and more in countries seeking industrial self-sufficiency.

Dividends Head for New High

An all-time record for cash dividend payments by chemical process companies now appears to be in the bag; and action by many boards of directors to increase fourth-quarter dividend payments this year is seen as an indication that continued high earnings and high dividends are expected to be forthcoming in 1957.

Through the first 10 months of this year, makers of chemicals and allied products paid out a total of $635.1 million in stockholders' dividends—a 15.2% rise over the previous year's 10-month total of $551.3 million. And dividend announcements since Nov. 1 have made it all but certain that this year's fourth-quarter figure will be on the same order as last year's (*see table below*).

However, not all chemical companies' dividends are riding this rising trend. Du Pont, for example, has announced that its 1956 common stock dividends would aggregate $6.50/share compared with '55's $7.

Increases Common: On the other hand, a greater number of chemical and pharmaceutical concerns will keep 1956 dividends on the same level as in '55; and a still greater number will be increasing cash dividends over last year's amounts.

Holding steady on the dividend courses they charted last year are such firms as Abbott Laboratories ($1.80), Food Machinery and Chemical ($2), Industrial Rayon ($3), International Minerals & Chemical ($1.60), Lehn & Fink ($1), Olin Mathieson ($2), and Pennsylvania Salt ($1.85).

Among the companies whose November or December dividend checks will put their '56 totals above '55 payments: Air Reduction, up from $1.50 to $1.90; American Cyanamid, up from $2.50 to $2.75; Pfizer, up from $1.55 to $1.75; Union Carbide and Carbon, up from $3 to $3.15; U.S. Borax & Chemical, up from none to 30¢; and Wyandotte Chemicals, up from none to $1.

In addition, more chemical companies will supplement cash dividends with stock dividends this year. In this category are Allied Chemical & Dye, Dow Chemical, Diamond Alkali, Monsanto Chemical, Rohm & Haas, and Stauffer Chemical—all of which are making 1956 cash dividends equal to, or more than, those paid in '55.

SWEETS FOR THE STOCKHOLDERS: PEAK YEAR FOR PAYMENTS

(Publicly announced dividend payments, in millions, by corporations making chemicals and allied products. Source: U.S. Dept. of Commerce)

Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Calendar-Year Total	Increase Over Previous Year
1952	$133.0	$134.4	$136.5	$179.1	$583.0	0.3%
1953	135.0	137.9	135.9	190.9	599.7	2.9%
1954	147.1	153.7	156.2	255.8	712.8	18.9%
1955	162.1	176.4	192.4	301.6	832.5	16.8%
1956	197.1	208.8	206.8	300*	900*	8.4%*

* Predicted.

LOOKING FOR LOOPHOLES

(How importers have tried to bring chemicals into the U.S. without paying full customs rates)

TACTIC	EXAMPLE
• End-products improperly labeled as intermediates.	Dyes and medicinals 99% completed (requiring only slight physical manipulation to become marketable) and identified as intermediates instead of as higher-duty finished products.
• Essential ingredients not acknowledged.	Parathion insecticide — described by importer as having as its active component low-duty phosphoric acid instead of high-duty coal-tar derivative.
• Physical disguise of imports.	Microcrystalline wax containing economically recoverable polyethylene resin but submitted for entry as duty-free wax mixture.

Clash on 'Disguised Imports'

A Customs Court dispute over packed tuna fish shapes up as a test case for U.S. chemical process manufacturers seeking to eliminate alleged duty inequities among certain "disguised imports" entering this country.

The case, which has a sizable portion of the chemical process industry looking on with rapt attention, involves a complaint by Star Kist Food, Inc., against a cut in the U.S. tariff on canned tuna packed in brine. The government moved for dismissal of the suit on grounds that tariff rates can be protested only by manufacturers or processors of identical or similar products. Star Kist packs tuna fish in oil rather than in brine.

Customs Court Judges David Wilson and Webster Oliver found for the government, and Judge Irvin Millison dissented. The decision is expected to be appealed soon in the Court of Customs and Patent Appeals.

Organic chemical makers have a particular interest in the Star Kist case because of their continuous war against importation of chemicals and chemical products at duty rates lower than they should be. Sources close to the problem, who refuse to be identified, hasten to say that criticism of the situation is not criticism of Customs Bureau officials. "They do an excellent job," one chemical manufacturer said, "but laws on the subject are complex, and some importers look for loopholes."

Judicial Remedy: Under the Reciprocal Trade Agreements Act, U.S. manufacturers have the right to use judicial remedy to protest import duty rates on products similar to their own. This right was suspended by Congress from 1934 until '51.

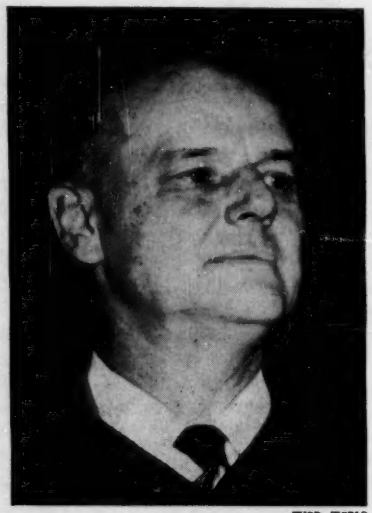
As one industry spokesman expressed it, however, "It is extremely difficult for U.S. chemical manufacturers to use judicial remedy. If the imported chemical is not identical to the complainant's, the courts may rule (as in the Star Kist case) dissimilarity."

Customs and Customs Court nip many would-be violations in the bud. In the parathion insecticide case (*see table*), the court ruled the product fell within the broad classification of insecticides—regardless of the product's property of being applicable to living, nondormant plants—and as such was subject to classification under one of the coal-tar paragraphs of the Tariff Act. Likewise, high-polyethylene microcrystalline wax, the court said, is more a resin than anything else, and subject to appropriate duty.

But despite Customs' vigilance, chemical industry "shop talk" indicates "disguised imports" are a significant problem. Just how effective judicial remedy will be in the future may hinge to a large extent on the Star Kist appeal.

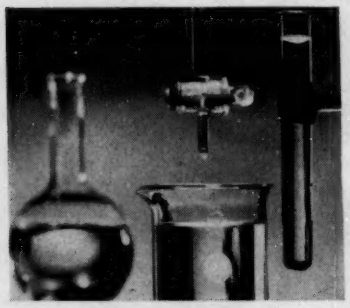
LEGAL

Cancer Pills: The federal government has gained at least a tentative victory in its battle against medicines that allegedly fall far short of living up to the curative powers that are claimed for them. After winning a jury verdict that seizure of 500,000 "cancer pills" from Hoxsey Cancer Clinic (Portage, Pa.) was justified, the government immediately asked Judge John Miller for permission to destroy the pills. The Food & Drug Administration also requested an injunction against the clinic banning interstate shipment of the same type

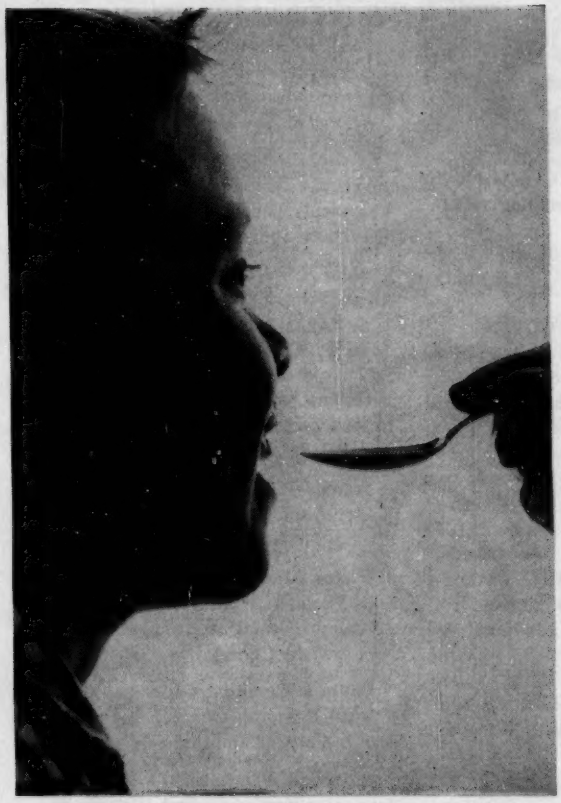


WIDE WORLD

JUDGE MILLER: Studying bid to destroy controversial 'cancer pills.'



Important in the synthesis of dyes and pharmaceuticals . . .



DOW phenylhydrazine

may be the intermediate you need to improve your product

Primarily, phenylhydrazine has been used as an intermediate in the manufacture of dyestuffs and pharmaceuticals. Its list of other applications is growing.

It can be a good starting point for the manufacture of many chemicals in a variety of fields. Using it in your synthesis may prove profitable to you!

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pills if they are misbranded as being effective in the treatment of cancer. Judge Miller took the motions under advisement, along with a request by clinic attorney Vincent Casey, of Pittsburgh, for a 10-day stay so he could file a motion for a new trial.

The only issue in the civil trial that began Oct. 5 was whether the government had the right to seize the pills.

Payments for Services: Despite its record-breaking activity in antimonopoly and antimerger litigations, the Federal Trade Commission is not overlooking its role—under the Clayton Act—in price discriminations. Latest such action: cease-and-desist orders against O'Cedar Corp., a subsidiary of American-Marietta Co. (Chicago), to prevent that company from paying certain customers for, and furnishing to certain other customers, services of sales persons acting as demonstrators, unless such payments or considerations are made available on proportionally equal terms to all other customers competing in the distribution of such products.

•

LABOR

Seeking New Strategems: Successful in a number of recent elections for bargaining rights at small plants, but rebuffed in several major organizing attempts, the Oil, Chemical & Atomic Workers Union (AFL-CIO) is making a study of its present unionizing techniques and has already decided that some of its regular tactics may be outmoded. "We have to recognize the fact that old methods of organizing no longer work in many cases," OCAW President O. A. Knight declares. "We are looking at new approaches to the problem." Representative of latest bargaining units won by OCAW: Olin Mathieson sulfur plant at Houston, Tex. (41 employees); Linde Air Products, division of Union Carbide, at Moundsville, W. Va. (12 employees); Globe Oil & Refining at Argo, Ill. (four employees).

•

Consulted on T-H Changes: If the nearly 10-year-old Taft-Hartley Act is revised next year, one of the prime movers in the amending job may be President Maurice Hutcheson of the United Brotherhood of Carpenters & Joiners (AFL-CIO), one of the few Republicans among current union leaders. Hutcheson was chosen by Labor Secretary James Mitchell to serve on a joint labor-management committee that will advise the Eisenhower Administration on proposals for changing the labor act's sections relating to the construction industry. Washington observers think it unlikely that Mitchell will be any more able to persuade Congress to alter the act in 1957 than he was in '54, '55 or '56; and they also doubt that the labor and

WIDE WORLD

CARPENTERS' HUTCHESON: For labor law revision, a leading role.

management members of this advisory committee will be able to agree on recommendations.

•

Long and Liberal: Illustrative of the sweeping trend toward long-range labor contracts in the chemical process industries are these two recent pacts with hefty wage hike clauses:

- At Louisville, Ky., a three-year agreement between B. F. Goodrich Chemical Co. and the Synthetic Rubber Workers local of the Distillery Workers Union (AFL-CIO), with immediate wage increases ranging from 11¢ to 15¢/hour and additional 4% increases in 1957 and '58.
- At Niagara Falls, N.Y., a two-year contract between Pure Carbonic Co. and the Oil, Chemical & Atomic Workers (AFL-CIO), with a 17¢/hour wage boost now and an 8¢ pay rise next year.

•

Briefing for Bargaining: Quite a few chemical process companies have been briefing their management personnel on bargaining practices, using a 50-minute motion picture made by the American Management Assn. showing an actual bargaining session. Among the firms that have used the film: Allied, Alcoa, American Cyanamid, Atlantic Refining, Champion Paper & Fibre, Dow, Du Pont, Eastman, and Food Machinery and Chemical.

KEY CHANGES

C. Scott Althouse, to board chairman, and **Howard F. Bjork,** to president, Althouse Chemical Co. (Reading, Pa.).

R. K. Turner, to vice-president, Carbide and Carbon Chemicals Co.; and **Wilder Beal,** to vice-president, Union Carbide Ore Co.; divisions of Union Carbide and Carbon (New York).

Clare William Bendigo, to technical director, and **William L. Lyall, Jr.,** to sales manager, Creslan Fiber Division, American Cyanamid (New York).

J. D. Zellerbach, to board chairman, **H. L. Zellerbach,** to chairman of the executive committee, **Alfred B. Layton,** to president, and **Reed O. Hunt,** to executive vice-president, Crown Zellerbach Corp. (San Francisco).

George A. Harrington, to general manager of development, Amoco Chemicals Corp., affiliate of Standard Oil Co. of Indiana (Chicago).

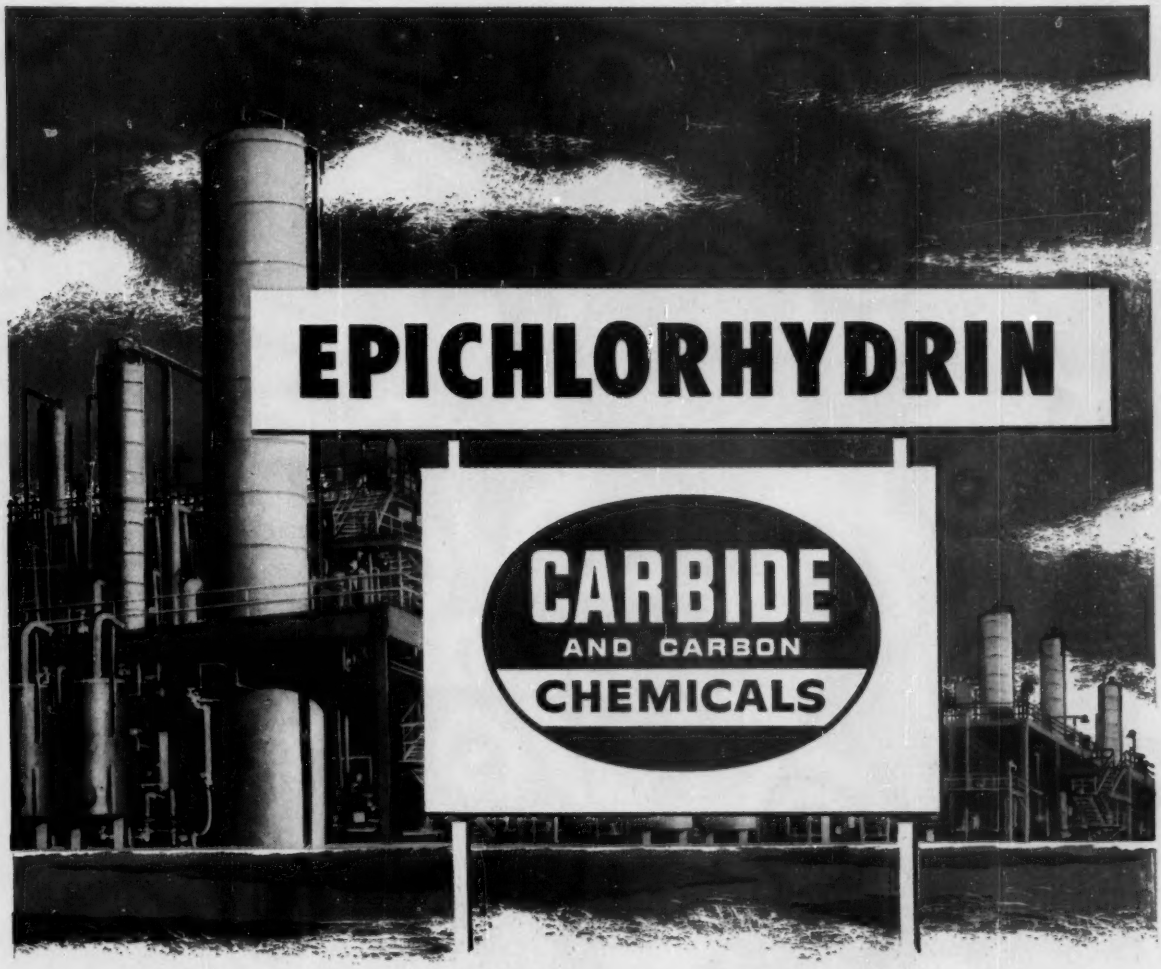
John A. Bartlett, to senior vice-president, **John J. Buckley,** to vice-president in charge of the Fuel Oil Dept., **John E. Capizzano,** to vice-president in charge of Eastern sales, and **Karl F. Giloth,** to vice-president in charge of Midwestern sales, all of American Mineral Spirits Co. (Chicago).

Stanley B. White, to vice-president, Kaiser Aluminum and Chemical Corp. (Oakland, Calif.).

Victor Muscat, to board chairman, and **Thomas I. Jaeger,** to president, Aluminum and Chemical Corp. (Greenwich, Conn.).

Philip J. Clough, to director, Metallurgical Research Dept., National Research Corp. (Cambridge, Mass.).

Raymond W. Smith, to vice-president, manufacturing; and **Richard W. Rigg,** to vice-president, marketing; Blue Ridge Glass Corp. (Kingsport, Tenn.).



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STABILIZERS
DYESTUFFS

That's not all— in addition to epichlorhydrin, Carbide and Carbon offers ethylene chlorhydrin and propylene chlorhydrin in commercial quantities for chemical syntheses.

You don't need experience or equipment when custom fillers load your aerosol product

Here's more good news—you don't have to invest in expensive equipment to get into the aerosol market. There are a number of experienced fillers located throughout the country who have the know-how and necessary specialized equipment to do the manufacturing job for you.

These custom fillers can help you in many ways including product evaluation, formulation, testing, container selection and labeling, filling, packing and shipping.

If your product can be brushed, poured or sprayed, it may lend itself to aerosol packaging. Why not find out more about this sure way to improve your product's appeal—and sales? Mail the coupon —we'll send you complete information.

"348 hair-spray aerosols sold in 2 months." That was a striking sales record to a Westport, Connecticut, druggist familiar with slow-moving conventional hair-set preparations. Your product in an aerosol package can pile up sales records, too.

"Aerosol room deodorants outsell conventional types 2 to 1" is the story from a Cleveland, Ohio, supermarket manager. Ease of use has moved aerosols up the best-seller list for many household and personal products. Aerosol packaging could do the same for your products.

IN AN AEROSOL PACKAGE

Here's how Du Pont can help you apply the sales-sparking aerosol idea to your product

Maybe you've noticed how more and more drug stores, hardware stores and grocery stores are featuring aerosols. At the point of sale, retailers know consumers prefer the aerosol method of dispensing. Time and time again, new sales spark has been added to an old product, and immediate consumer acceptance gained for a new one by putting it in an aerosol package. You can profit, too, by putting your product in an aerosol dispenser.

One of the surest ways to succeed with an aerosol is to call in Du Pont to help you get started. Since the original aerosol insecticide, Du Pont has been in on every major aerosol development. This accumulated experience of laboratory experts and marketing specialists is on tap to help you get started in aerosols, and Du Pont has worked closely with independent fillers to assist them in producing top-quality products.

In aiding you with your aerosol formulation problems, Du Pont can help you select the best "Freon"* propellent for your product. "Freon" propellents are ideal for aerosols, because they are safe—nonflammable, nonexplosive and virtually nontoxic. "Freon" propellents are pure—Du Pont's 25 years' experience manufacturing "Freon" assures the utmost in purity and quality. There is sure to be a "Freon" propellent ideally suited to your aerosol product.

Find out more about aerosol packaging and what Du Pont can do to help you increase consumer acceptance of your product. Mail the coupon below for your copy of the informative booklet "Package for Profit." It's free—mail the coupon today.

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SAFE PROPELLENTS

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- ☐ Please send me your booklet on aerosol packaging, "Package for Profit."
- ☐ Please send me market-research data on aerosols.
- ☐ I want to learn how I can get technical assistance on aerosols.

*Name*_____ *Position*_____

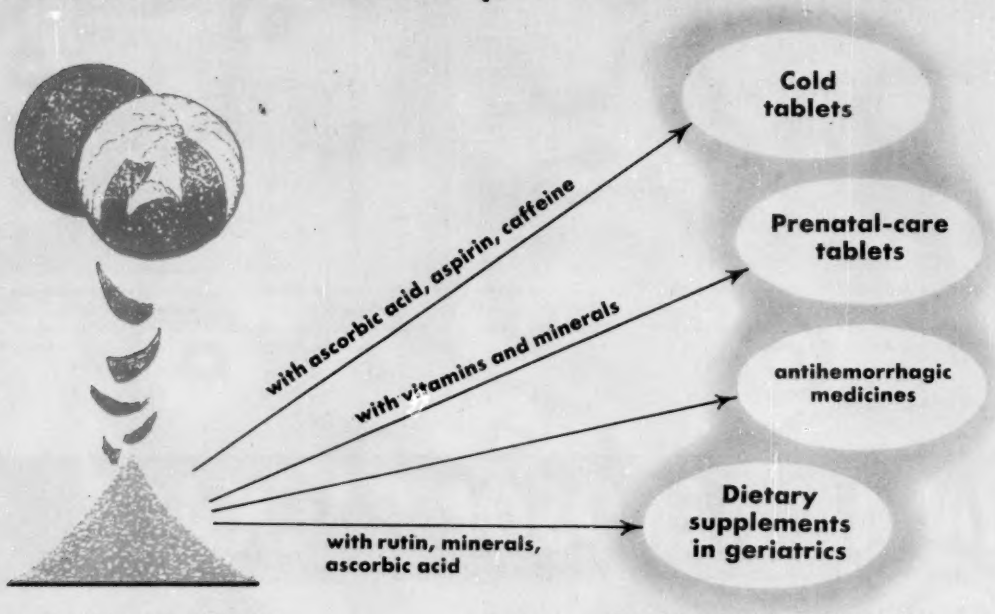
*Company*_____

*Address*_____

*City*_____ *State*_____

1612

Citrus bioflavonoids end-uses are many, but the boom's in cold medicines



From the skin pulp (albedo) are extracted small amounts of flavonoid

Combined with various other medicines, the flavonoids have a raft of uses

Cold Drug Kindles a Hot Controversy

Citrus bioflavonoids*—medical curiosities 20 years ago, commercial realities for less than a dozen years, clinically accepted compounds for only 3-4 years—were suddenly hoisted from relative obscurity last week and pitched headlong into a controversy that promises to be both bitter and long-lasting.

In the main, the controversy revolves about the effectiveness of the bioflavonoids as cold remedies (preventives or cures). And, though trade names haven't yet been used in the wrangle, it's quite apparent that the product that brought the matter to a head is Grove Laboratories' (St. Louis) Citroid Compound, a proprietary cold medication that's now getting a $2-million promotion ride. Citroid, test-sold in eight cities last year, is neither the first nor the only product available over-the-counter, but its impact has dwarfed virtually that of all the others—at least so far as the public is concerned.

• Fuel for a fight was heaped on last week (*CW Technology Newsletter, Dec. 1*) by publication in the *Journal of the American Medical Assn.* (Nov. 24 issue, pp. 1224-1232) of two research papers, both of which asserted that bioflavonoids (in combination with ascorbic acid, as is invariably the case) are virtually without effect in treatment of colds. One was a pilot study of some 89 patients; the other a study of some 1,900 (in the latter group, patients all received antihistamine-salicylamide-acetophenetidin-caffeine treatments, too).

• The Journal papers follow hard on the heels of a speech by the U.S. Food & Drug Administration's Dr. Albert H. Holland to the National Wholesale Druggists Assn., in which he declared he had seen no evidence that bioflavonoids were useful or beneficial in the treatment of colds. Just last week, Dr. Holland told CHEMICAL WEEK:

"There's not the slightest shred of well-controlled, scientific evidence that citrus bioflavonoids are effective in treating the common cold." He went on to say he regards the work that was recently described in the AMA *Journal* as "well-controlled and well-planned medical studies."

• It was revealed that there have been informal conferences about the new cold medicines between FDA and the Federal Trade Commission. FTC's Fred Irish explained to *CW* that his group, which can issue "cease and desist" orders about advertising, has the matter under consideration, but that no decision has been reached, nor is one likely in the next couple of weeks.

Grove, now the nation's top advertiser of bioflavonoid products, is bearing the brunt of this unfavorable publicity. But it is far from alone. Selling to the medical profession, Na-

*Bioflavonoids are found in many plants, and so far, some 137 different types have been found in some 277 plants. But citrus seems to be the favored source now (rutin, extracted from buckwheat and tobacco, has been commercially offered for some time, too). Generally speaking, citrus bioflavonoids are alkaline-soluble—they are pressed from the white pulp or albedo of the fruit, acidified, crystallized and dried.

In Medical Supplies, Too

THE KEY IS CELLULOSE GUM

Redux Electrode Paste, a product of Sanborn Company, Cambridge, Mass., manufacturers of electrocardiographs, relies on Hercules® Cellulose Gum (purified carboxy-methylcellulose) as a suspending agent to keep the formulation at its proper consistency.

Designed for use with cardiograph equipment, Redux Paste is a scientifically prepared ingredient essential in providing the necessary electrical contact of electrodes and patient's skin so that heart voltages may be properly transmitted to the electrocardiograph. This entirely new formula is a creamy, smooth paste that is non-irritating and odorless.

Sanborn Company is typical of the many manufacturers of medical preparations who have found versatile Cellulose Gum an important ingredient in improving pharmaceutical and cosmetic products. As a film-former, thickening agent, and suspending agent, Cellulose Gum can be the key ingredient in making fine products even better. And the exceptionally high purity of Cellulose Gum (99.5+%) helps give the uniform results desired.

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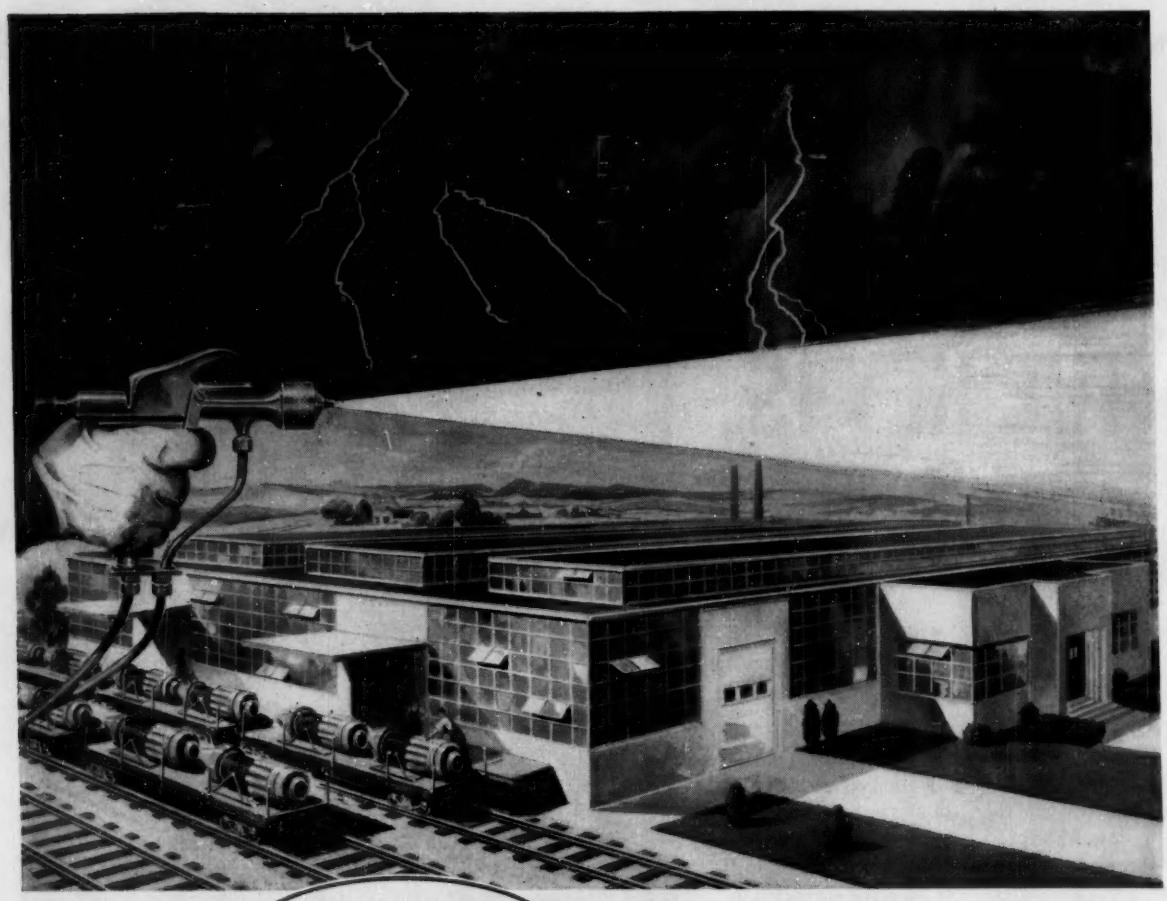
VG56-3



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tional Drug Co. (a division of Vick Chemicals, Philadelphia) and J. B. Roerig & Co. (a Chas. Pfizer subsidiary) have also demonstrated considerable faith in the usefulness of the bioflavonoids. But none of these has camped on the cold-fighting theme as Grove has.

Grove, in the most exposed position of any of these firms, isn't without material to defend its bioflavonoids. Three papers felt to support its stand are to be found in recent journals: Nov. '56 issue of the *Journal of Industrial Medicine and Surgery* (research by Dr. W. L. Macon Jr., on 121 persons at McDonnell Aircraft); another study of 400 in the October issue of that journal by Dr. Robert McLane; and a third in the November Journal of *Clinical Medicine*, by Dr. Earle Wentworth, Jr.

Grove, along with several other firms interested in utilizing bioflavonoids, points out that the flavonoid naringin used in one experiment has never been suggested by anyone for cold therapy. And it feels that the use of additional medicines besides the bioflavonoids (such as antihistamines and antibiotics) has, to a large extent, invalidated such tests of bioflavonoids.

Stumbling Block to Growth? While Grove, well grounded in the proprietary medicine (best known item is Bromo-Quinine Cold Tablets) and familiar with the in-fighting of that business, is dismayed by the current turn of events, more so are producers of the basic citrus bioflavonoids. The very unfavorable light cast on bioflavonoids for cold-fighting could possibly reflect unkindly on the compounds in general—and bioflavonoids have been developing a following in a broad variety of uses.

Currently, bioflavonoids valued at well over $2 million (makers' level) are consumed in the U.S., with cold remedies taking about 50%. Right now, two firms share this supply business—Sunkist Growers (California), which sells to all comers, and Pasco Packing Co. (Dade City, Fla.), is selling its output exclusively to U.S. Vitamin Corp. But word is that Minute Maid is seriously considering entering the field, and others have expressed interest.

Versatility Plus: But there's a long list of products in which bioflavonoids find favor. Perhaps the most promising application is in dietary supplements for expectant mothers. Combined with vitamins, minerals, and the like, bioflavonoids reportedly prevent accidental abortion. Several products of this sort are offered; National Drug offered its entry last month, and U.S. Vitamin has one slated for the market this week.

The same general formulations—usually in capsule or syrup form—find many other applications: in treating hypertension (along with *Rauwolfia*), genitourinary difficulties (e.g., hemorrhagic cystitis). Other applications of different formulations still under research include burn and frostbite therapy, and the prevention of blood problems in the newborn due to RH incompatibility. They've been used experimentally in combination with blood coagulants (prothrombin) to prevent hemorrhaging (injectable forms have demonstrated promise here).

Capillary Builders: In all these cases, the function of the bioflavonoid seems to be one of strengthening the capillary wall. A wall so bolstered is less likely to "leak" blood and, by the same token, virus. It is this property that is claimed to account for the effectiveness of bioflavonoids in cold-fighting (the cold virus can't penetrate into the body from the bloodstream).

There are some nonmedical applications, such as in metallic flavonoids and dyestuffs, but most work has been concentrated in the medical and nutritional fields.

Soluble vs. Insoluble: Though there is considerable agreement that bioflavonoids do strengthen capillary walls, there's serious disagreement as to whether water-soluble types or nonsoluble ones work more effectively.

Back when work was first done on the citrus bioflavonoids (they were first termed vitamin P by discoverer Dr. Albert Szent-Gyorgyi), a nonwater-soluble component found in relatively large amounts was called hesperidin. It is now among the most widely used flavonoids.

But there are others who feel that lack of water-solubility seriously hampers a bioflavonoid's action. Foremost among these is U.S. Vitamin Corp. (New York), which uses only the soluble products made by its own patented processes.

SPECIALTIES

Use Them All: Rather than chance any loss of effectiveness, Grove is using almost all the currently available bioflavonoids in its Citroid. It claims to have an exclusive combination, but chances are it includes these products now offered by Sunkist: purified hesperidin ($10/lb.), hesperidin complex ($7.50/lb.), hesperidin methyl chalcone ($23.50/lb.), lemobioflavonoid complex ($10/lb.) calcium flavonate glycoside ($23.50/lb.), and naringin ($9.50).

The hesperidin products (insoluble) are made from oranges and lemons, the naringin (insoluble) from grapefruit, and the others (soluble) from lemons.

No Give-Aways: Although no "minimums" have been set, most of the bioflavonoid capsules or tablets contain about 100 mg. of the compound, and consumption of 400-600 mg. daily is suggested. Such medication isn't cheap—for example, U. S. Vitamin's CVP is 50 pills for $4.50; Grove's Citroid, $1.50 for 16 capsules.

Price has not slowed sales, however. Grove reports that last year (a short selling season) more than 1 million Citroid capsules were sold in the eight cities where they were offered. It also admitted that Citroid bit deeply into sales of its own Bromo-Quinine tablets, although these are also bioflavonoid-fortified.

It also seems apparent that over-the-counter antihistamines have felt the impact of bioflavonoids. As one maker of the flavonoid materials pointed out, one of last week's AMA *Journal* papers was based on work with chemicals supplied by Nepera Chemical Co. (Yonkers, N. Y., which has a subsidiary, Anahist Co.; Nepera seems likely to be purchased by Warner-Lambert Pharmaceutical Co.). The other, by Dr. Harry Tebrock, described tests in which patients received an anti-histamine formula, plus bioflavonoids and placebos.

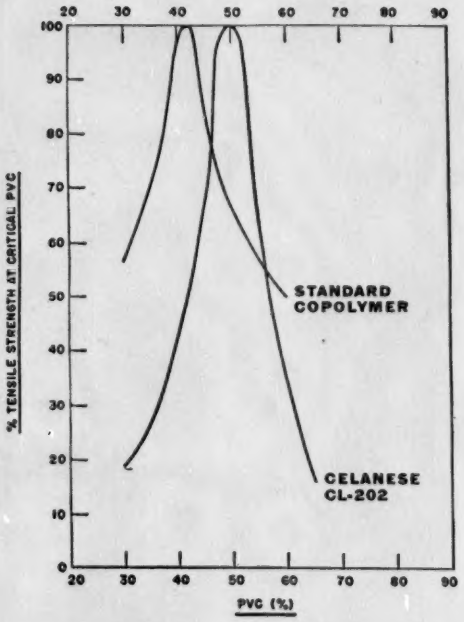
What the whole fight will add up to is hard to say. Perhaps Grove will have to modify its Citroid campaign—but that won't be unusual; for example, its original advertisements referred to Dr. Szent-Gyorgyi, but this was later stopped at his request. Perhaps cold medicines with the citrus extracts will receive other setbacks, but it seems plain that bioflavonoids as therapeutants will expand their markets.

COPOLYMERS

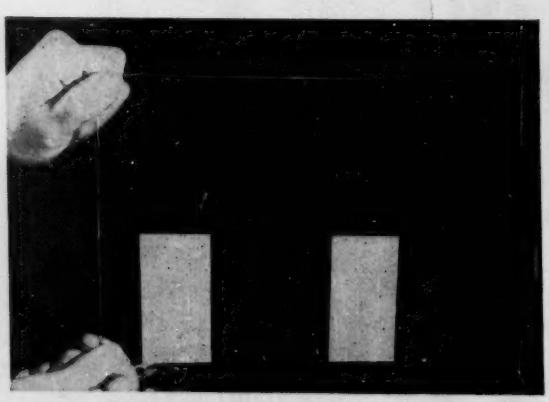
PRIMER SEALER WITH CELANESE EMULSION

PRIMER SEALER WITH STANDARD EMULSION

LOW TEMPERATURE COALESCENCE. Pictured above are two primer sealers identical in formulation except for the emulsions used (both homopolymers). These primers were cast (4 mil wet film) at *34° F.* on glass and allowed to cure overnight at this temperature. The paints were then stained and photographed from the reverse side of the glass. The primer on the left made with Celanese PVAc exhibited superior film coalescence as evidenced by the sharp reduction in stain penetration.

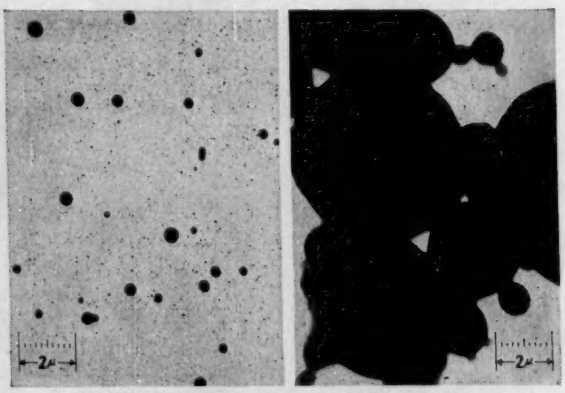


HIGH PIGMENT BINDING. Celanese emulsions are designed as paint vehicles. Because of this they exhibit extremely high pigment binding capacity. The above graph was prepared by plotting the tensile strength of paint films at progressively higher PVC's. A standard formulation was used and only the emulsions differed. In this comparison (both copolymers) the Celanese emulsion exhibited a critical PVC of 8% above the other copolymer.



STANDARD HOMOPOLYMER CELANESE CL-102 STANDARD COPOLYMER

SUPERIOR WATER RESISTANCE. Pictured above are three drawdowns of unpigmented PVAc films. (Both homopolymers plasticized with DBP.) The films were dried 72 hrs., then immersed in water for 5 min. The CL-102 film in the center maintains its crystal clear appearance and is substantially unaffected by the water.



CELANESE EMULSION STANDARD EMULSION

FINE PARTICLE SIZE. The "inside story" of Celanese improved PVAc emulsions is clearly demonstrated in the above photomicrographs. Fine particle size indicates higher pigment binding, better non-settling, tighter, more closely knit films and better penetration of chalky or porous surfaces when applied at low viscosities.

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A Celanese technical representative will be happy to discuss these characteristics with you and assist you with any technical problems you have. In addition, Celanese has prepared a manual of standard laboratory tests by which you can determine the properties of any resin emulsion vehicle. You can obtain a copy of this manual along with technical bulletins covering Celanese PVAc paint emulsions by filling out and mailing the coupon below.

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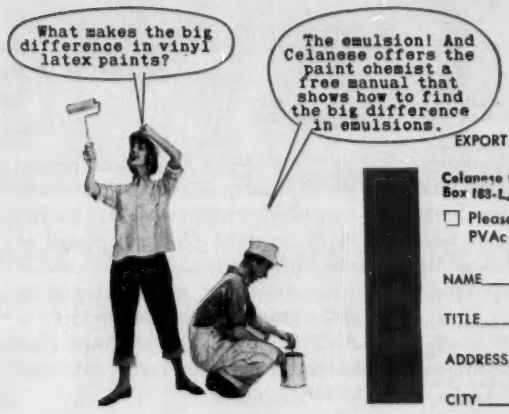

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SPECIALTIES

Wax Conjecture Comes True

Ever since the first shipment of Fischer-Tropsch waxes from South Africa's Sasol plant was unloaded in New York last July, there's been speculation that some U.S. firm might oxidize Sasol raw materials into readily emulsifiable "self-polishing" floor waxes. That conjecture was borne out this week with the revelation that Aerogon Chemical Industries (New York) is in production of emulsifiable Fischer-Tropsch waxes in this country (*CW Market Newsletter, Nov. 24*).

Aerogon, a newly created firm headed by Kurt Wasserman, offers five different grades of the oxidized waxes, about the broadest range yet available to U.S. polish firms, as well as two

Aerosol Beauty Contest

JUDGING products by their covers was the job of this panel*, which got together in New York before this week's Washington meeting of the Chemical Specialties Manufacturers Assn. They picked the winners of CSMA's fifth annual aerosol package competition. At the convention, plaques were awarded to makers of the products (*bottom*) picked as most attractively packaged in each of 10 classifications. Best looking of all 200 entries, the judges decided, is Air Spray by Lactopine (Swiss Pine Importing Co., New York), front and center.

*Left to right: Donald Deskey, Donald Deskey Associates; Edward Molyneux, Cunningham & Walsh, Inc.; Julien Elfenbein, Haire Publishing Co.; Miss Antoinette Donnelly, New York *Daily News;* John A. Warren, American Management Assn.

NITRIC ACID...

over a million tons produced annually in plants designed by

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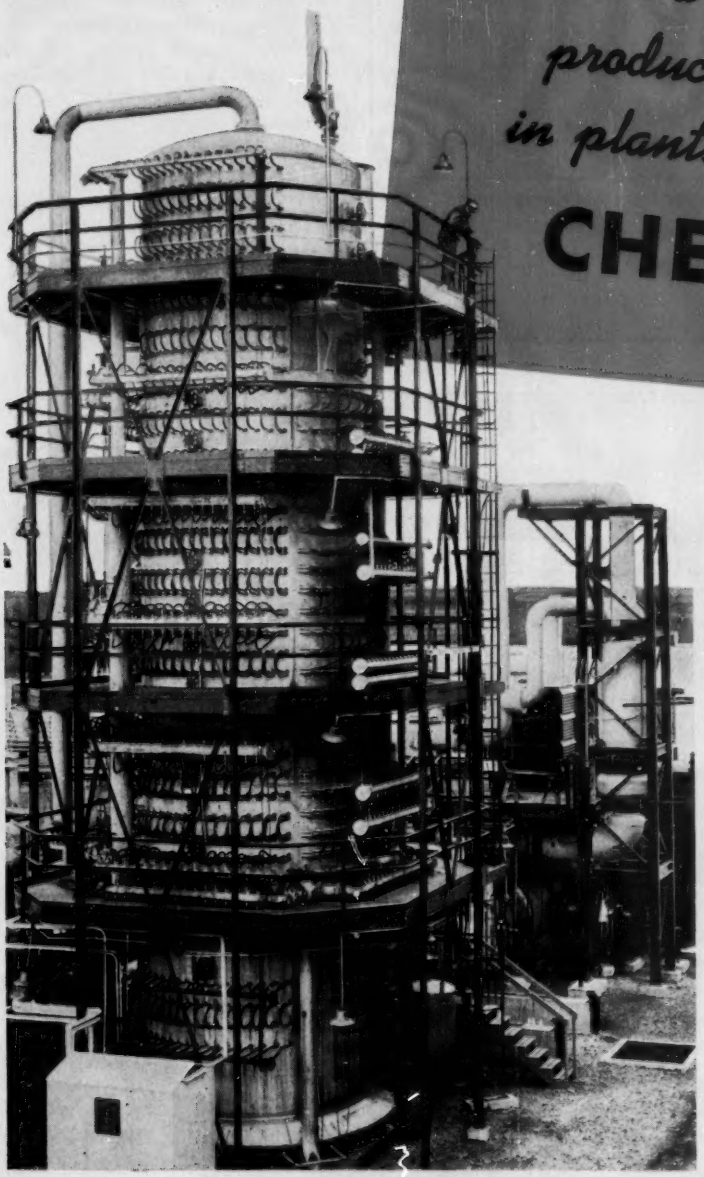

This new plant of Allied Chemical & Dye Corporation was designed and constructed by Chemico at Hopewell, Virginia. Now on stream, it will add 82,500 tons of nitric acid annually to the more than a million tons being produced every year in plants designed by Chemico.

For the first time, a through gas turbine cycle is integrated into a chemical process to provide complete heat recovery from waste gases at 120 psi—another example of pioneering in plant design for the chemical industry by Chemico.

• • • •

28 Chemico-designed nitric acid plants are operating throughout the world, including the first plant in the United States based on ammonia and built in 1916.

CHEMICAL CONSTRUCTION CORPORATION

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Cable Address: Chemiconst, New York
Designers and Contracting Engineers of Plants for the Chemical and Petrochemical Processing Industries

CC321

SPECIALTIES

types of oxidized microcrystalline waxes, and one type of unoxidized Fischer-Tropsch wax. Perhaps more significant than the variety, however, is low price—Aerogon offers its top-grade emulsifiable wax (185-195 F solidification point; pale yellow color; 1 to 2 penetration at 100, g/77 F/second) for about 40¢/lb., in quantity.

The new oxidized waxes are expected to offer competition not only to the vegetable waxes and to the previously offered emulsifiable F-T waxes of Dura Commodities Corp. (New York) but also to the currently popular oxidized microcrystalline waxes (based on petroleum waxes) produced by Warwick Wax and Petrolite-Bareco.

So far, Aerogon hasn't revealed precise location of its new facilities, other than to say they're on the East Coast. Capacity of the current operation is around 1 million lbs./year, but Wasserman says his firm can expand to meet "virtually any demand."

Capacity, of course, depends upon raw-material availability. Sasol materials are now being imported only by Moore & Munger, which sells its own brand of nonoxidized Fischer-Tropsch waxes under the Paraflint tag. M&M says the waxes, selling in the 17-24¢/lb. range, are now arriving in quantity.

There's always the possibility, of course, that other producers of the oxidized hydrocarbon waxes will come forward; M&M has no exclusive supply agreements with Aerogon. But oxidizing is a tricky process; only three firms ever went into quantity production of the oxidized microcrystallines. Even now, few firms are likely to try it.

EXPANSION

School Mates: American Crayon Co. (Sandusky, O.), 121-year-old maker of chalks, crayons, paints and other school and artists' supplies, plans to merge with Joseph Dixon Crucible Co. (Jersey City, N.J.), 129-year-old pencil and industrial products maker. If stockholders approve, Dixon will exchange capital stock for the assets of American Crayon.

•

Sisters Bought: Ogilvie Sisters, hair preparations maker, has been bought by Lehn & Fink Products Corp. (New York), maker of pharmaceuticals and cosmetics. Ogilvie will be operated by

SPECIALTIES

Lehn & Fink's Dorothy Gray sales division.

•

Plus One: Lanolin Plus, Inc. (Chicago), has purchased State Pharmacal Co. (Chicago) for an undisclosed sum.

•

TVA Experiment: The Tennessee Valley Authority is prepared to sell up to 100 tons/fiscal year of its newest TVA fertilizer products to manufacturers outside the valley. The materials may be used for manufacture of high-analysis mixtures, for formulating new products or for experimental work. Products available: calcium metaphosphate with an analysis of 60-62% available phosphorus pentoxide; and diammonium phosphate analyzing 21-53-0. TVA plans to study applications, look for economies.

PRODUCTS

Anti-Inflammatory: Skin inflammations caused or complicated by infection are targets of a new topical ointment from Pfizer Laboratories. It's called Neo-magnacort Ointment, contains a new steroid form (hydrocortisone diethylaminoacetate hydrochloride) and the antibiotic, neomycin. The joint anti-infection and anti-inflammation treatment is said to give fast action without side effects.

•

Aluminum Cleaner: For polishing discolored areas of aluminum cookware, windows, doors, screens and the like, E. G. Davison Mfg. Co. (Chicago) is offering a new aluminum cleaner. A dollar buys a 6-oz. polyethylene bottle with bristle brush applicator; the label warns against using a rag, as well as against bringing the product into contact with painted surfaces, or skin.

•

De-Icer: Saf-Vue de-icing fluid is a new product that aims to prevent formation of ice and frost on auto windshields. Made by Winkenweder & Ladd, Inc. (Chicago), it sells at $1 for a 3½-oz. squeeze bottle.

•

Cedar Squeezer: "Any closet a cedar chest" is the idea behind a new household chemical, Liqui-Cedar. Sprayed on unpainted surfaces within closets, the squeeze-bottle-packed product adds a strong odor (said to be 100 times as powerful as that of natural cedar) to help keep moths away. Maker: Liqui-Cedar Co. (Orangetown, N.Y.).

EXPANDING?

IT PAYS TO SEE . . .

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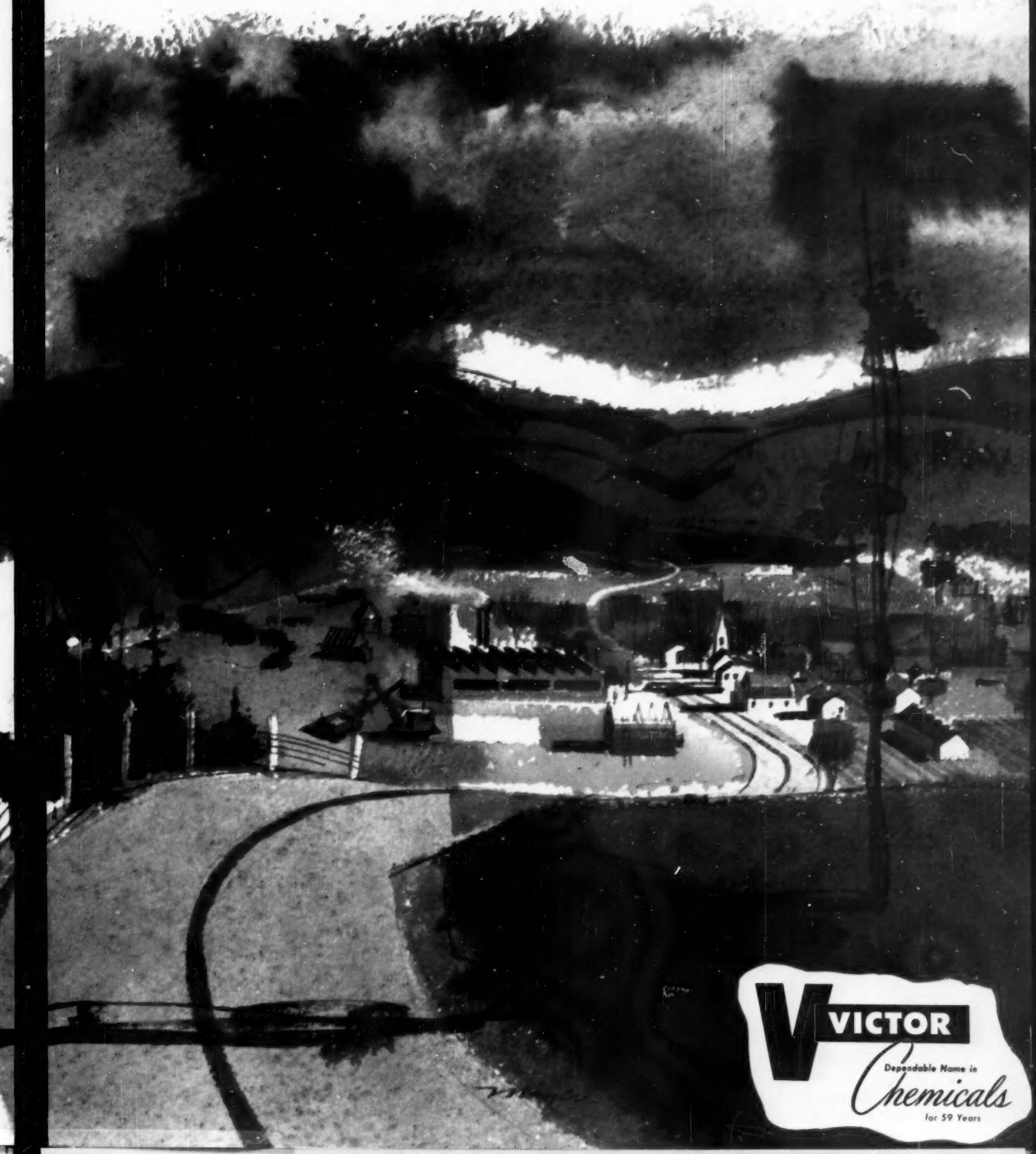
Here, too, it pays to see Victor. If you're a chemical engineer, sales engineer, or chemist and planning to expand your personal horizon . . . it's no secret, a talk with Victor may be to your benefit.

For information, write to: Victor Chemical Works, Technical personnel Div., 155 N. Wacker Drive, Chicago 6, Illinois.

expanding horizons



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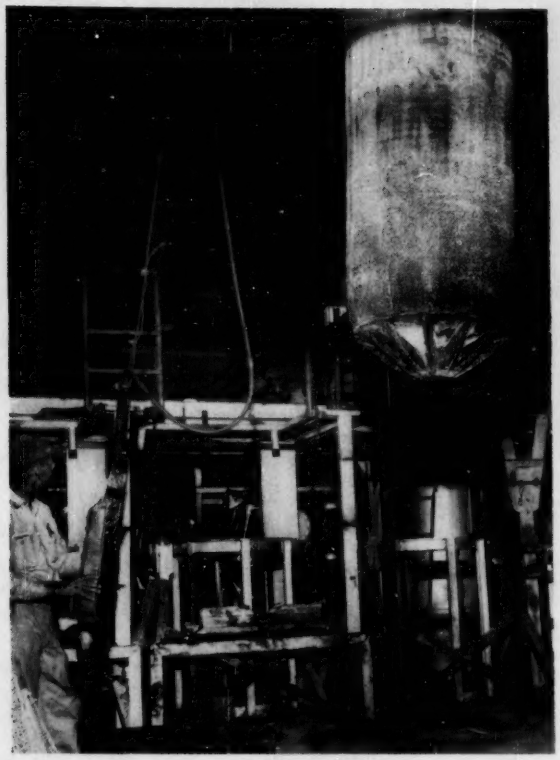


OLD: Kroll pilot plant exits.

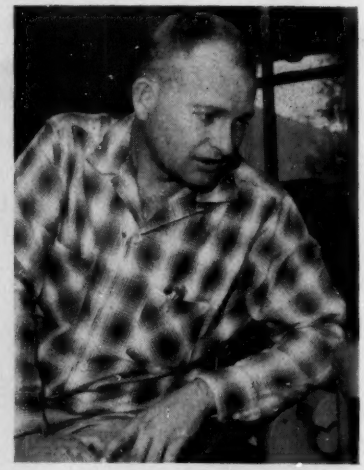
NEW: Prototype cell sets stage as . . .

Government Makes Way for Electrolytic Titanium

To seasoned titanium researchers, there's nostalgia and more in the scenes above. Although they depict the passing of Kroll process research at the U. S. Bureau of Mines' Boulder City, Nev., station, the pictures also herald the advent of new emphasis on electrolytic techniques to make the metal. For over two years (1953-56), the station—which did most of groundwork in commercializing the Kroll process—has operated a Kroll pilot plant. Now, the latter is being dismantled to make way for a semi-commerical 10-20,000-amp. electrolytic cell based on a 4,000-amp. prototype (*above, right*).

While all present commercial titanium production involves chemical reduction (by either magnesium or sodium), there's room for optimism over the electrolytic approach. That's largely because chemical processes depend on high-cost raw materials (e.g., titanium tetrachloride), are difficult to put on a continuous basis. Even $1.25/lb. for chemically produced titanium

BOULDER CITY STATION: From electrolysis, the cheapest titanium yet?

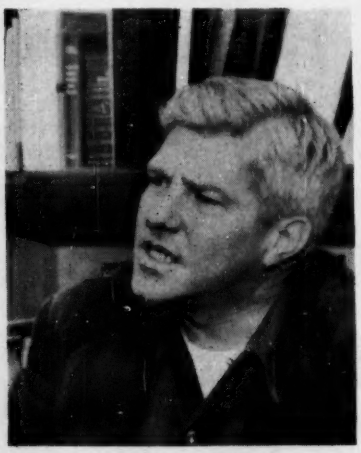


BAKER: In extrapolation, a clue to commercial electrolytic titanium costs.

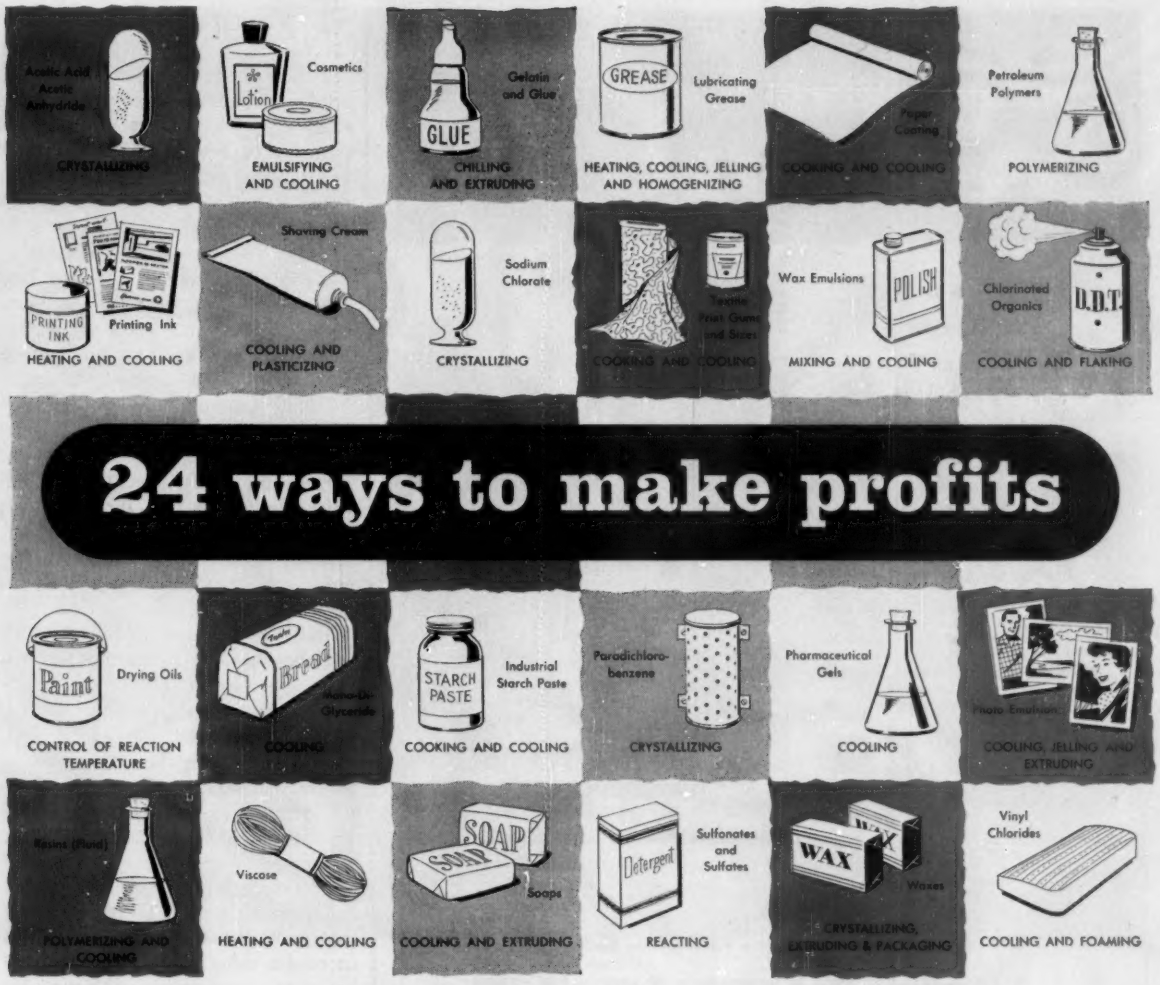
(currently selling for $2.30-$3.00/lb.) is generally considered too high for the metal to become a common construction material. But the bureau's fused-salt electrorefining process* (*see p. 62*), according to the station's superintendent Del Blue, "promises (high-quality) titanium at a cost of less than $1/lb."

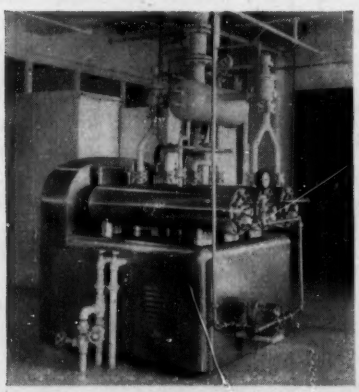
Early in 1952, bench work in Boulder City indicated that a fused-salt electrorefining process might be feasible. Construction of a 100-, 500-, 1,000- and finally the 4,000-amp. cell followed. Much of the station's re-

* Not to be confused with electrowinning, which covers production of primary metal from virgin raw materials. Electrorefining refers to recovery of pure metal from scraps, alloys, etc.



BLUE: 'Our aim . . . to bypass high-purity titanium tetrachloride.'





Push-button operation: *Here, high-speed cooling . . . automatically controlled . . . improves the uniformity of gel. This* VOTATOR *Continuous Cooling Apparatus drops product temperature in seconds.*

Results of high-speed heat-transfer by GIRDLER

Here's a sure key to better quality and lower costs in the manufacture of products such as the 24 shown on this page:

Girdler's VOTATOR* Processing Apparatus continuously heats or cools viscous and liquid materials at rates of six to ten times those of conventional batch methods. This rapid heat transfer, plus simultaneous agitation vastly improves quality control, processing-efficiency and output-rates for a wide range of products and processing functions.

If you manufacture any product involving heat-sensitive or viscous liquids, you cannot afford to overlook this unique processing method! Girdler engineers will gladly advise you on your application. Call our nearest office today.

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In Canada: Girdler Corporation of Canada Limited, Toronto

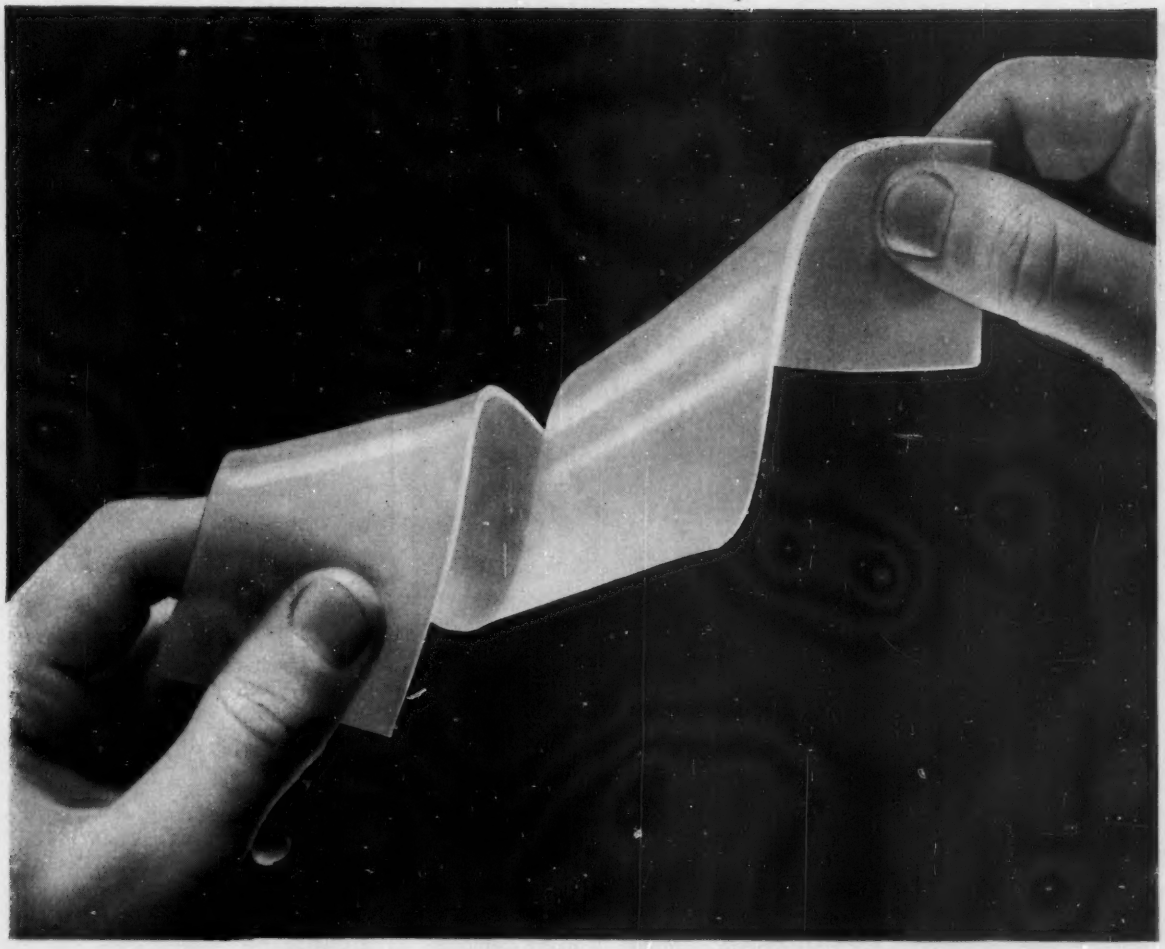
search has been on optimum operating conditions and in improved cell design—e.g., improvements in cathode stripping to cut downtime. But Blue and his staff are actively researching other related fields, too, particularly cheaper raw materials to feed the cells. There are several possibilities.

Away from Scrap: In the new process, mixtures of scrap titanium-bearing metals serve as the anode. But Boulder City researchers are looking for other, cheaper raw materials. Particularly interesting, is their 3-step, low-temperature (400 C) ilmenite chlorination process (*Chemical Engineering, March, p. 110*). It involves reduction of ilmenite with petroleum coke at about 1400 C, leaching the reduction product to remove iron, chlorination to yield about 90% of the titanium as $TiCl_4$.

Early next year, they intend to try the unchlorinated feed in the electrorefining process.

As part of the bureau's Albany, Ore., slag work (*CW, Oct. 20, p. 79*), the Boulder City station is also studying chlorination techniques for high-titaniferous slags produced from low-grade domestic ilmenite. Current work is centered about design of the chlorinators (static or fluidized bed), sludge handling techniques (recovery of vanadium, chromium, etc., would add economic value to the process), and optimum operating conditions for maximum recovery, maximum purity and minimum cost. Within the next few months, the station hopes to be able to come up with preliminary cost estimates based on the present 1-ton/day semicommercial plant.

Other Angles: A variety of feed materials and even the nonelectrolytic titanium processes are also getting their share of research by the station's staffers. "Our primary aim right now," says Blue, "is to find both a process and a feed that will bypass present requirements for high-purity titanium tetrachloride. There are more than 130 patent applications on file for electrolytic titanium, but most of them are based on $TiCl_4$ or such titanium salts as K_2TiF_6, both relatively expensive materials. The bureau sees little sense in duplicating that work. We're trying to develop feeds based on materials such as impure aluminum-thermic reduction products, ferro-titanium nitride, titanium oxide and ilmenite. We'd also like to bypass the



For Permanently Plasticized Copolymers . . . Rohm & Haas Acrylate Monomers

When you copolymerize Rohm & Haas acrylate monomers with vinyl chloride, vinyl acetate, vinylidene chloride, acrylonitrile, or styrene you get permanent plasticization. The primary chemical bonds which are formed mean that the acrylates cannot be extracted by even the strongest solvents and cannot migrate or volatilize.

As a result, films and coatings remain flexible longer and withstand attack by heat and ultraviolet light.

Acrylate copolymers generally require lower processing temperatures, too, forming films readily because of increased flow. Often, copolymerization with acrylate monomers may be the only plasticization necessary. External plasticizers can still be added if desired. Write for your detailed booklet.

ROHM & HAAS ACRYLATE MONOMERS

Methyl acrylate	Ethyl methacrylate
Ethyl acrylate	Hexyl methacrylate
Butyl acrylate	Decyl-octyl methacrylate
2-Ethylhexyl acrylate	Lauryl methacrylate
Methyl methacrylate	Stearyl methacrylate
Butyl methacrylate	Glacial methacrylic acid

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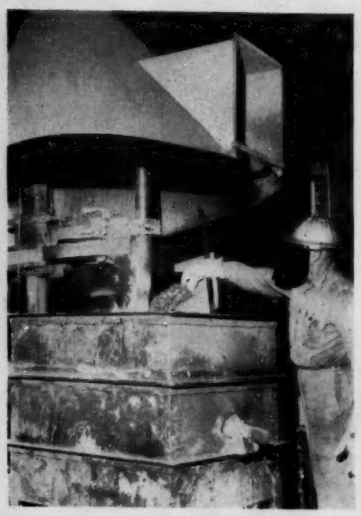

SMELTING RESEARCH: For electrorefining, low-cost raw materials.

troublesome and relatively expensive chlorination step." The goal: feed at less than 50¢/lb. of titanium content.

Alternate Approach: But Blue isn't staking everything on this ambition. A promising sodium reduction process is also under investigation at Boulder City. The station's interest in sodium reduction is twofold: as a method of preparing the master mix for its electrorefining process, and as a primary production method for coarse crystalline metal of high purity.

The station's unique 2-step process yields high-purity (as low as 50 Brinell hardness) crystalline metal that is readily melted to ingot—rather than the difficult-to-consolidate powder common to most sodium reduction processes. Blue feels the newcomer is a likely candidate for continuous processing studies. But it needs a lot more study, primarily on methods of control. At present, yields range from 27-87%—with no apparent difference in processing conditions.

Other Products: Metals other than titanium are getting a close look, too. The 100-amp. research cell that gave birth to the station's titanium process is now being used to develop an analagous zirconium process. The first batch of zirconium was made last September with, Blue claims, "highly successful results." Vanadium, iron, chromium and just about any metal that forms various valence chlorides are also amenable to the new process.

Now "Dutch Boy" gellant research is helping improve latex paints

Today, latex paints are booming.

Interior types are moving fast. Exterior types are being developed now to repeat this success.

A product of "Dutch Boy" gellant research . . ."Dutch Boy" BEN-A-GEL® . . . is making unique contributions to *both*.

In inside latex paints, "Dutch Boy" BEN-A-GEL steps up color, hiding power, durability, easy stain removal and prevents water spotting.

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Together with BEN-A-GEL, the BENTONES — also products of "Dutch Boy" gellant research—are aiding new developments in cosmetics, insecticides, heavy-duty lubricants, inks, many related products. Even ceramics.

And "Dutch Boy" produces many stabilizers that do the same in vinyl plastic products.

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- ☐ Latex Emulsion Paints Data Sheet
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"Dutch Boy" Brochures on:
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*Firm*_____

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*City*_____ *State*_____

BuMines makes way for electrolytic titanium (see p. 55)

Electrolytic Titanium Operating Costs

LABOR COST/LB.		$0.16
● Pounds of metal produced/hour	2.25*	
● Man-hours/lb.	0.15	
POWER COST/LB. @ 4.5 mills/kwh.		0.11
● Kwh./lb.	24.80	
CONSTANT MILL COST		0.35
● 0.012316 helium/lb. @ $11.84/cyl.	0.145	
● 163,600 gal. water/lb. @ $0.11/1,000 gal.**	0.018	
● Leaching, seizing, sampling/lb.	0.191	
TOTAL		$0.62

* 95%-80 BHN (Brinell hardness).
** Not recirculated.

How Cheap Is Titanium?

The figures above are a long way from reflecting commercial titanium costs. They derive from pilot operations of the Bureau of Mines' electrolytic process at its Boulder City, Nev., station, do not take into account a host of expenses that a commercial firm would have to include. But even at this early stage of development, Don Baker, pure metals supervisor at the station, feels that the process could be commercialized to yield quality titanium at less than $1.25/lb. His figures are based on extrapolation of operating costs of the 4,000-amp. cell (*above*) to the 10-20,000-amp. cell now being planned (*see p. 55*). They include expected amortization, taxes, profit, raw material charges. Further cell improvements could also cut costs.

Secret in the Mix: How are these low figures attained? The secret of the bureau's process lies in the formation of a 5% divalent titanium complex (12.4% $TiCl_2$) in fused sodium chloride electrolyte. To make this master mix, finely divided molten sodium droplets are passed through titanium tetrachloride vapor at 650 C in a tower reactor. Feed rates are controlled to produce this stoichiometric reaction:

$$TiCl_4 + 2Na \rightarrow TiCl_2 + 2NaCl$$

More salt is added to dilute the divalent titanium concentration from 20% to 5%.

An alternate way of making the master mix is to submerge titanium metal in fused sodium chloride, bubble titanium tetrachloride up through the bed. Though some $TiCl_3$ is formed if the feed rates and reaction conditions are not controlled carefully, the reaction, $Ti + TiCl_4 \rightarrow 2TiCl_2$, can be controlled stoichiometrically.

One of the major questions the bureau has had to settle is the optimum divalent titanium concentration in the fused-salt electrolyte. The 5% figure represents the best balance between allowable cathode density and loss of titanium values in the fused-salt drag-out that accompanies cathode withdrawal. It permits cathode current densities up to 5,500 amp./sq. ft. with minimum deposit surface-to-weight ratios. Higher divalent titanium concentrations increase electrolyte viscosity and the amount of titanium lost in the salt adhering to the cathode —without appreciably increasing allowable cathode current densities.

Almost any mixture of titanium-bearing metals can serve as the anode. Examples: off-grade Kroll sponge (500-600 Brinell), commercial pure scrap (machine turnings, floor sweepings, etc.), alloy scrap. Oxygen content of anode material used to date has varied between 1% and 2%, nitrogen content between ½% and 2%, iron content between ½% and 3%. The

WHAT

has xylene to do with the center stripe?

Cosden XYLENE (10°)

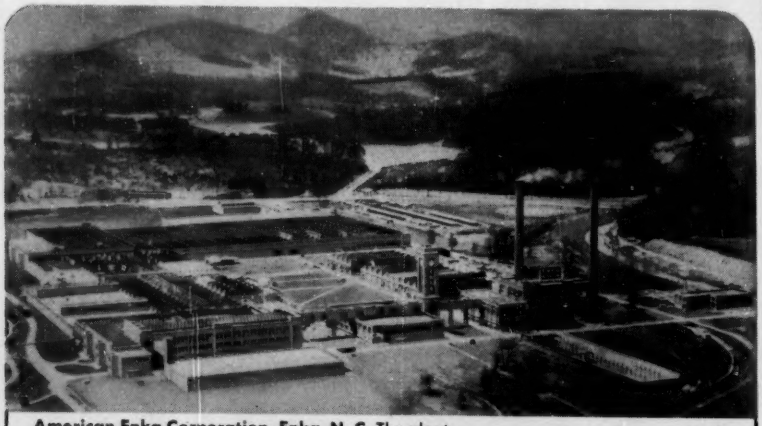
Specific Gravity	0.872
Distillation Range	
IBP	136°C
50%	140°
Dry Point	144°
Acidity	Passes
Copper Corrosion	Passes
Doctor Test	Passes
Acid Wash Color	0 to 1
Paraffins	Nil
Sulfur Compounds	Nil
Flash (Tag C. C.)	80°F Min.
Mixed Aniline Point	11°C
KB Value	98

- Cosden xylene is often formulated in traffic paints as well as scores of other applications.
- Your reasons for buying xylene may have nothing in common with the stripe down the highway . . . but for xylene meeting these specifications Cosden offers a ready supply.
- Distributors in principal Midwest cities.

Organic Chemicals Division

CHEMICAL COSDEN DIVISION

COSDEN PETROLEUM CORPORATION BIG SPRING, TEXAS



RESEARCH

cathode is mild iron, with an area 25-50% that of the anode. The cell operates at 850 C under an inert (helium) atmosphere, produces coarse, granular crystals of titanium that are readily melted to ingot.

EXPANSION

• Atlantic Research Corp. (Alexandria, Va.) plans to start construction of new research laboratories and offices early in 1957. The buildings, costing about $1 million, will go up on a 43-acre site (less than eight miles from Washington, D. C.) destined to become the firm's permanent headquarters. The firm plans to maintain its other installations at Alexandria and Gainesville, Va. Projects in combustion, applied polymer chemistry, special instrument development, and ballistic sciences predominate among the company's industrial research contracts.

PRODUCTS

• Bovine mastitis, which costs dairy farmers about $225 million annually in loss of cows and milk, can be treated with a new therapeutic agent which combines the antibiotics streptomycin and penicillin with Meticorten acetate (a steroid anti-inflammatory agent). The product, Metibiotic, is marketed through veterinarians only by Schering Corp. (Bloomfield, N. J.).

•

• Chemicals Procurement Co. (New York) now offers these biochemicals: 5-aminouridine; 5-bromouridine; 5-chlorouridine; 5-hydroxyuridine; 5-bromodeoxyuridine; 5-hydroxydeoxyuridine; 3-methyldeoxyuridine and 5,6-dihydrodeoxyuridine. They're reportedly free of impurities detectable by chromatography, UV spectra.

•

Anti-Ozonants: Now commercially available from Eastman Chemical Products (New York), subsidiary of Eastman Kodak Co., are two anti-ozonants for GR-S rubber compounds (*CW, March 17, p. 60*). Designated Tenamene 30 (N,N′ -di-2-octyl-*p*-phenylenediamine) and Tenamene 31 (N,N′ -di-3-(5-methyl heptyl)-*p*-phenylenediamine), they're designed to meet the new performance specifications set by the U.S. Army Ordnance Dept. for all rubber products, including tires.

Using Salt Efficiently

by **INTERNATIONAL SALT COMPANY, INC.**—America's largest producer of salt

You Can Save Money on Water Softening—With a "Lixator"

Today, a great many companies using zeolite water softeners are faced with this problem: While the water softener (which needs periodic regeneration with brine) gives excellent performance—regeneration is often costly, time-consuming, and causes substantial waste of salt. This is generally the case when salt is dissolved to form brine without the proper controls.

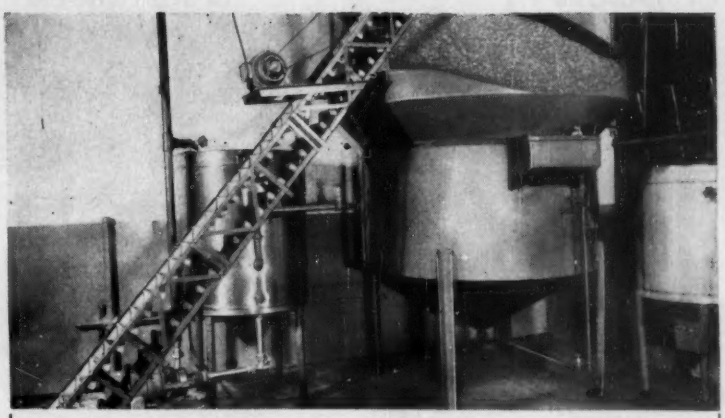
In most plants, however, it *is* possible to reduce this high cost of water-softener regeneration. The method is simple and effective: Always regenerate with pure, fully saturated brine—the type of brine made in a Sterling Lixator. Here are some of the reasons why Lixate Brine can save money for users of zeolite water softeners . . .

The Sterling Model Lixator is the most efficient and economical rock-salt dissolver ever developed. Wherever this fully automatic unit is used in water softening, it reduces the amount of salt consumed . . . eliminates dry-salt spillage . . . and simplifies the entire brine-making process. Developed and patented by the International Salt Co., the Lixator combines rock-salt dissolving and brine filtration in one simple operation. It delivers fully saturated crystal-clear brine *automatically* to any point within a plant. The Lixator is also remarkably easy to maintain, and has no moving parts to get out of order.

In operation, a Lixator need not replace the salt-dissolving tanks furnished by water-softener manufacturers. Instead, Lixate Brine is piped to these tanks—which then serve as the storage and measuring tanks from which brine is withdrawn for use.

Salt handling reduced. Because Lixate Brine is *piped* to points of use, the work of hauling dry salt from storage piles to the location of the water softeners is eliminated. Also, because of this direct-piping feature, the Lixator (and the salt that feeds it) can be placed anywhere in the plant, to make the most efficient use of available space. With a self-feeding hopper for salt, the Lixator operates automatically, without attention, and with little or no salt handling.

Lixators are made in a variety of types and sizes— to meet the brine needs of individual plants. The principle by which they operate can benefit the largest factory, or even a plant of moderate size.



At the Libby, McNeill & Libby plant in Hartford, Wisconsin, this Sterling Model Lixator is used for efficient, low-cost water-softener regeneration. A mechanical conveyor fills the Lixator hopper from a nearby rock-salt storage pile. In *your* plant, a Lixator can also produce substantial savings on salt—and in salt handling as well.

Complete regeneration. Since Lixate Brine is always 100% saturated, it provides complete water-softener regeneration each time. This means that extra regenerations—with the consequent use of more salt— are eliminated. Still another advantage results from using Lixate Brine: Water-softener operators will not use any more of this brine than is needed for each regeneration. What often happens in the case of unsaturated brine is that excess amounts are used in an attempt at complete regeneration. In the long run, this always results in a costly waste of salt.

Keeps water softeners clean. Besides being fully saturated, Lixator Brine—produced in a Lixator from economical grades of Sterling Rock Salt—is also self-filtered, and free from insolubles or other foreign matter. As a result, it will not introduce dirt or other "clogging material" into the zeolite bed of the water softener. This has proved to be a particular advantage in industrial water softening—because the zeolite stays in good condition longer. Lixate Brine is also free from acids or alkalies. Thus, being neutral, it cannot adversely affect the performance of any zeolite water-softening system.

TECHNICAL SERVICE WITH YOUR SALT

Through skilled and experienced "Salt Specialists," International can help you get greater efficiency and economy from the salt you use. International produces both Sterling Evaporated and Sterling Rock Salt in all types and sizes. And we also make automatic dissolvers in metal or plastic for both kinds of salt. So we can recommend the type and size of salt most perfectly suited to your needs.

If you'd like the assistance of an International "Salt Specialist" on any problem concerning salt or brine—or further information on water-softener regeneration—just contact your nearest International sales office.

International Salt Co., Scranton, Pa.

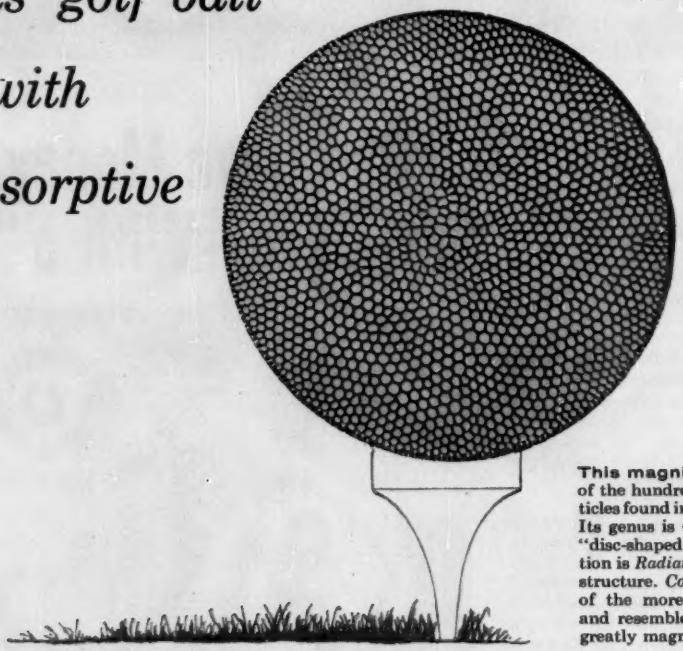
Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa., Pittsburgh, Pa., and Richmond, Va.

FOR INDUSTRY, FARM, AND THE HOME—

STERLING SALT

PRODUCT OF INTERNATIONAL SALT CO., INC.

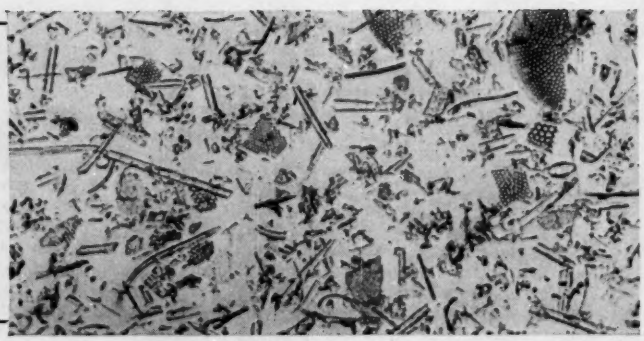
What's this "golf ball" got to do with greater absorptive capacity?



This magnification shows just one of the hundreds of different shaped particles found in Celite diatomaceous earth. Its genus is *Coscinodiscus* which means "disc-shaped sieve." Its species designation is *Radiatus* which refers to its radial structure. *Coscinodiscus Radiatus* is one of the more common marine diatoms and resembles a "golf ball" only when greatly magnified.

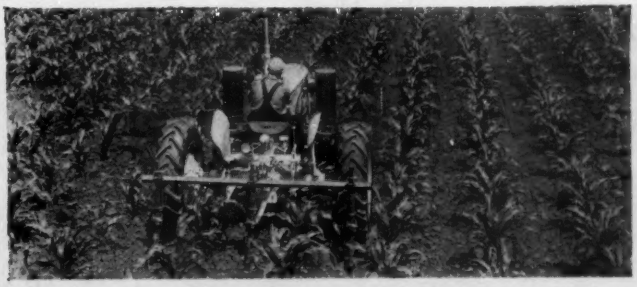
It's a particle of CELITE that absorbs more than

The secret of diatomite's remarkable properties is shown in this photomicrograph. The infinite variety of particle shapes and sizes gives Celite diatomite its exceptional performance characteristics in a wide range of process applications. The large percentage of voids both between and within particles like the "golf ball" provide porosity for high absorption.



Johns-Manville CELITE

Helps polishes soak up oil and dirt. In polishes for silver, other metals, glass and airplanes as well as automobiles, Celite absorbs residual oil, dirt and other solid matter. In addition, Celite imparts a delicate non-scratching polishing action.



Provides free-flowing fertilizers for uniform coverage. In ammonium nitrate fertilizers, highly absorbent Celite particles form a protective coating which helps prevent contact between crystal faces . . . thereby minimizing caking and assuring good flowability.

Controls viscosity in adhesives for corrugated paper. For precise control of viscosity and surface penetration, manufacturers of many types of adhesives rely on Celite's excellent absorptive capacity.

-the diatomite mineral filler twice its weight of liquid

Mix 100 cc of water with 100 grams of Celite* . . . the water is so completely absorbed that the mixture exhibits all the properties of a dry powder. This demonstration is visible proof of the high absorptive capacity of Celite diatomite fillers. Actually it will absorb 2 to 3 times its own weight before reaching its liquid holding limit. The reason is that approximately 93% of a given volume of Celite is composed of air spaces or voids. Despite its highly porous nature, however, Celite does not absorb moisture from the air.

In addition, Celite has many other unique properties which give it wide application as a mineral filler. Its high bulk—a cubic foot weighs only ten pounds—reduces outage in packaged powder products and provides the needed bulking action in many other formulations. The irregular shape of the particles and their hard silica structure adds reinforcing strength to paints and plastics. Other uses include concrete, insecticide diluent, paper and as a source of silica in "water glass" and "lime-silica" insulating materials.

Produced from the world's purest commercially available diatomite deposit, Celite comes in a wide range of grades. Each grade is carefully controlled for complete uniformity.

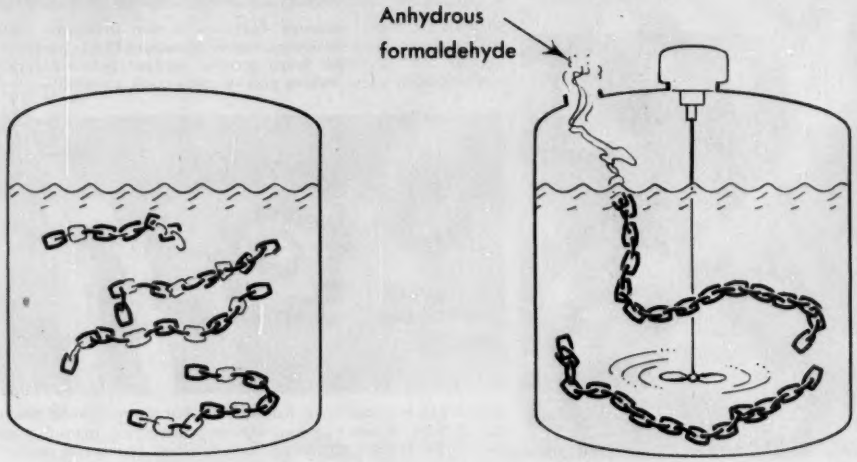
Ask your nearest J-M Celite engineer to tell you how Celite can help solve your formulation problems. He's backed by Johns-Manville's extensive research facilities and years of practical diatomite experience. Call him today or write Johns-Manville, Box 60, New York 16, New York. In Canada, write Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

Industry's most versatile MINERAL FILLER

JOHNS-MANVILLE JM PRODUCTS

polyoxymethylene: controlled introduction is the key to forming STRONG CHAINS



WEAK LINKS, formed by slow polymerization of dissolved formaldehyde, are unstable to heat, plastic-forming stresses.

STRONG CHAINS, produced by constant-rate polymerization of formaldehyde monomer, form a tough, crystalline polymer.

Polymer Process Weeds Out Weak Links

With the debut last fortnight of Du Pont's new Delrin acetal resin (CW Technology Newsletter, Nov. 24), formaldehyde added another member to the plastics branch of its prolific family tree. The new scion is the product of a patented (U.S. 2,768,994) process—the first commercial method of polymerizing formaldehyde into stable, high-molecular-weight polyoxymethylene. The key: a controlled-rate polymerization that prevents the formation of unstable links in the polyoxymethylene chain.

Though formaldehyle has long supplied the strong connecting links for a host of other plastics (phenolics, urea, melamine, other formaldehyde-modified resins), previous attempts to produce straight formaldehyde polymers never met with much success. Several of the earlier polymers looked promising, but were too easily degraded by aging and fabrication operations to be of commercial use.

Reaction Mechanics: To solve the puzzle of polyoxymethylene's unpredictable stability, Du Pont researchers focused on the little-understood reaction by which formaldehyde polymers are formed. In the classical "bulk" or "solution" polymerization methods, the monomer is present in large quantities, readily forms short chains and undesirable compounds that weaken the polymer chain.

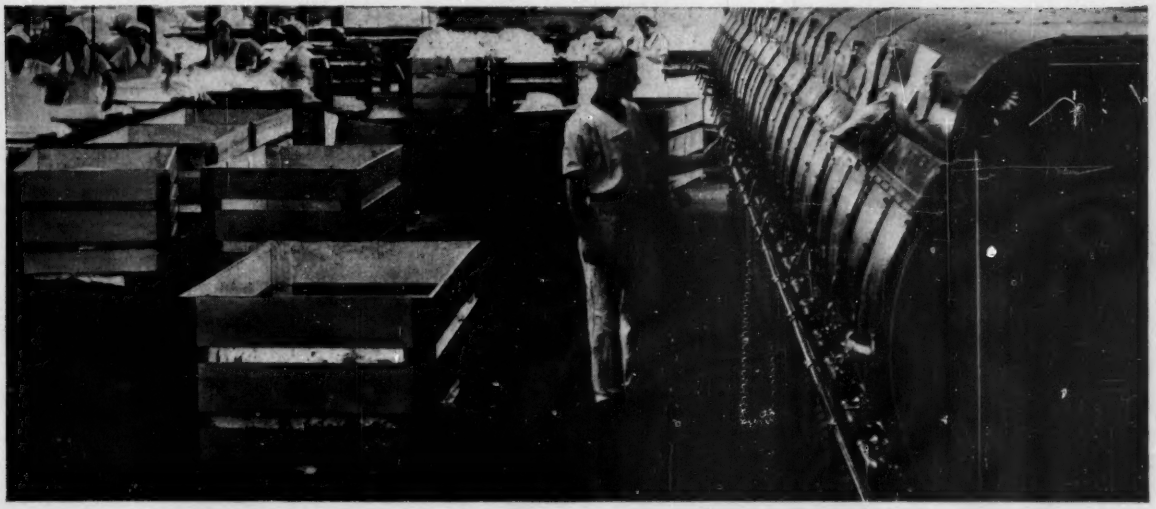
Du Pont proved by a number of tests that longer, stronger chains of recurring CH_2O groups are formed when anhydrous, gaseous formaldehyde is polymerized continuously as fast as it enters the reaction zone.

The company doesn't fully understand the reaction mechanism responsible for the improved plastic produced by the new technique. But it theorizes that constant-rate polymerization effects some purification of the monomer and/or the reaction medium, reduces the availability of monomer for undesirable side reactions.

First step in the production of polyoxymethylene is the generation of the pure monomer. This was supplied, for most of the tests, by pyrolyzing α-polyoxymethylene (an unstable polymer containing 99.0-99.9% formaldehyde). The gaseous monomer is then swept out of the pyrolysis system by a slow stream of nitrogen at atmospheric pressure, carried through two cold traps (at -15 C) to the top of a reaction chamber.

As the monomer enters the chamber, it contacts a rapidly agitated reaction medium, instantaneously polymerizes into the desired product. Preferred reaction media are hydrocarbons, containing 3- to 10-carbon atoms per molecule, which are chemically inert to formaldehyde under reaction conditions. Other media may be used, but the hydrocarbons appear to be the likeliest choice from the standpoint of cost.

Flexibility: Though the details of Du Pont's pilot operation for the production of Delrin haven't been disclosed, the patent indicates that the process is flexible over a wide range of conditions. Polymerization may be



THE WASH in DETERGENTS

or THE WEAR in VINYLS

is better when you manufacture with Enjay Oxo Alcohols

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They also can depend on the extensive facilities of the Enjay Laboratories to aid in the application and use of all Enjay products.

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Enjay offers a diversified line of petrochemicals for industry:

HIGHER OXO ALCOHOLS (Isooctyl Alcohol, Decyl Alcohol, Tridecyl Alcohol); LOWER ALCOHOLS (Isopropyl Alcohol, Ethyl Alcohol, Secondary Butyl Alcohol); and a varied line of OLEFINS AND DIOLEFINS, AROMATICS, KETONES AND SOLVENTS.

ENJAY COMPANY, INC., 15 WEST 51st STREET, NEW YORK 19, N. Y. Other Offices: Akron, Boston, Chicago, Tulsa

carried out at temperatures from -100 to 100 C, preferred range is -50 to 70 C. Dispersing agents, in the amount of 0.20-3.0% by weight of the reaction medium, may be added to facilitate handling of the crystalline polymer slurry.

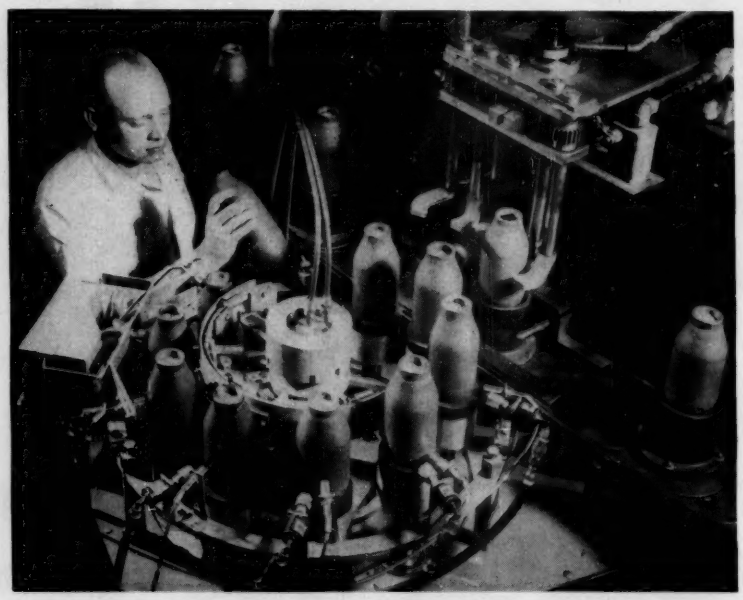
Under certain conditions, catalysts may be used to initiate polymerization but they are not essential to the formation of the desired product.

All of Du Pont's tests, and presumably its pilot production of Delrin, employed a semicontinuous process. But with provisions for continuously withdrawing the product dispersion from the reaction zone, says Du Pont, the method is readily adaptable to completely continuous operation.

For the Future: Though Du Pont has proved, at least to its own satisfaction, that the new polyoxymethylenes have all the makings of a commercial engineering material, Delrin production is still limited to pilot scale. The company's immediate aim: field testing, further engineering studies to evaluate Delrin's long-range possibilities. Targets: injection-molded and extruded parts, ranging from equipment components (gears, bearings, etc.) to aerosol bottles and wire coatings.

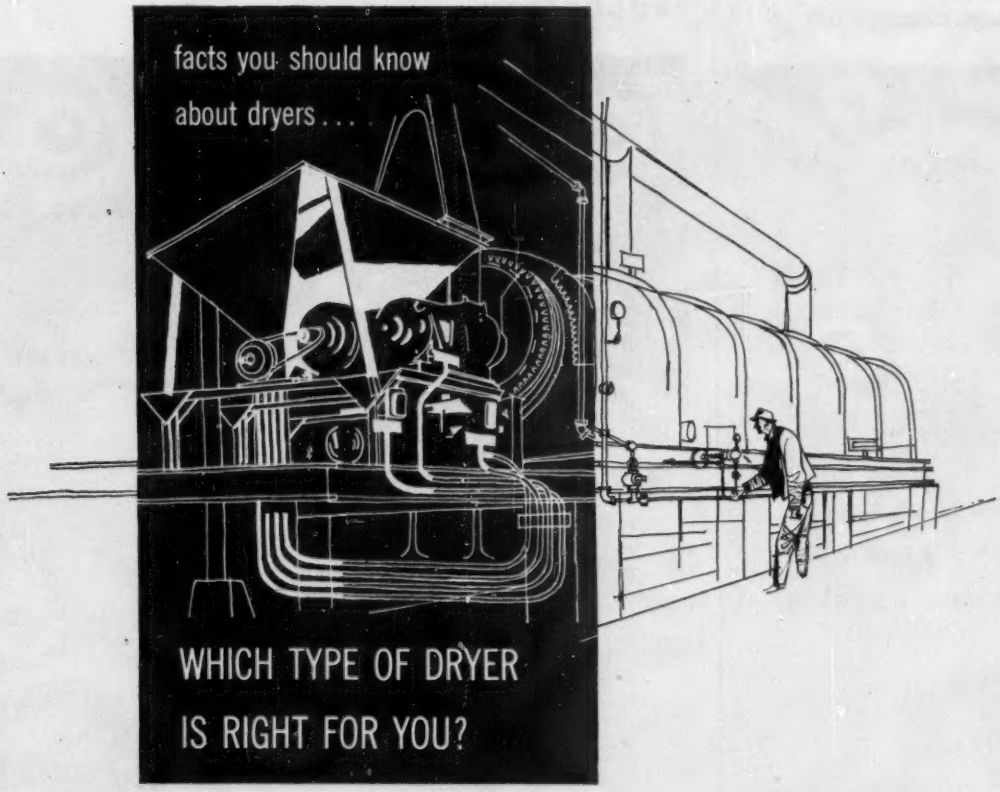
Two forms of the resin (in ⅛x⅛-in. cylinders) are currently available in limited quantities: Delrin 500 X injection-molding resin, Delrin 150 X for extrusions. Commercial quantities probably won't be available before 1959. But by that time, hopes Du Pont, the promising polyoxymethylene will be a useful complement for its Zytel nylon resins.

* Polymers have a "degree of toughness" (minimum toughness retention) of at least 1, thermal degradation rate of less than 1%/minute at 222 C.



X-Ray 'Eyes' Spot Munitions Flaws

A ROBOT with X-ray eyes—that's how General Electric describes the munitions tester (*above*) built by its X-ray department for the Army Ordnance Corps' Cornhusker plant (Grand Island, Neb.). Peering through 3.5-in. artillery rockets, the unit detects internal flaws, informs a digital computer, which decides if the defect is serious enough to reject the rocket. Robot's "eyes" are cadmium selenide crystals that send out electric currents when excited by X-rays. The machine eliminates the use of expensive X-ray film, says GE, requires fewer operating personnel than previous inspection procedures.



For over 55 years, Louisville Dryers have been solving industry's drying problems and effecting marked economies. The following is intended as an introduction to selecting the right type of dryer.

Q. *What types of dryers are there?*

A. Many types. They can be classified in two basic categories, namely, batch type and continuous.

Q. *What is proper application of the continuous type?*

A. Where large enough capacity is required to make savings in labor, space, and fuel advantageous.

Q. *What are some other advantages of the continuous type?*

A. Uniform quality of dried product. Lower drying cost.

Q. *What types of continuous dryers are most used?*

A. Rotary, Conveyor, Flash, Spray, Atmospheric Drum.*

Q. *Do all of the above types handle the same kind of material?*

A. No. While they discharge a dried solid, Spray and Drum Dryers are fed with a liquid. (Liquids and thin slurries can be handled in the other types by means of special designs or auxiliary equipment, but seldom are).

Q. *How can I be sure of getting the right type of dryer for my operation?*

A. Louisville engineers start by surveying your needs. Then, after considering the pertinent factors, they make recommendations for dryer type, heating medium, etc. Their recommendations can be proved by practical drying tests in General American's pilot plant. Your Louisville Dryer is then designed and built to suit your particular purpose and to fit your individual needs.

Q. *How can I investigate the matter in greater detail?*

A. Call in a Louisville engineer. No cost or obligation.

*Discussions to follow will deal with the subject in more detail.

PROCESS EQUIPMENT DIVISION
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TRADE MARK

LOUISVILLE DRYING MACHINERY UNIT

GENERAL AMERICAN TRANSPORTATION CORPORATION

Dryer General Sales Office: 139 So. Fourth Street, Louisville 2, Kentucky
Eastern Sales Office: 380 Madison Avenue, New York 17, New York
In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario, Canada
General Offices: 135 S. La Salle Street, Chicago 90, Illinois

ELECTRODIALYSIS PROBERS* tot up sugar-processing gains as . . .

Ionic Processes Move Ahead

Electrolytic ion exchange, which has been plodding slowly but surely toward a number of production applications, last week moved two steps closer to its goals. The first step brought it to the halfway point in a data-gathering pilot operation being conducted by the Hawaiian Sugar Planters Assn. Aim: to adapt electrodialysis to processing of cane sugar. The second step carried it to the threshold of operation in the world's largest electrolytic fresh-water-from-salt-water plant—Bahrain Petroleum Co., Ltd.'s 86,400-gal./day installation on Bahrain Island in the Persian Gulf (*CW Technology Newsletter, Dec. 1*).

Ionics, Inc. (Cambridge, Mass.), designer of both these pace-setting installations, has long touted electrolytic ion exchange as worthy competition for other water-purification processes. The Bahrain unit tends to support Ionics' claim, will replace a distillation plant that, in the past, supplied fresh water to the community of Awali (about 5,000 population) near the Bapco refinery.

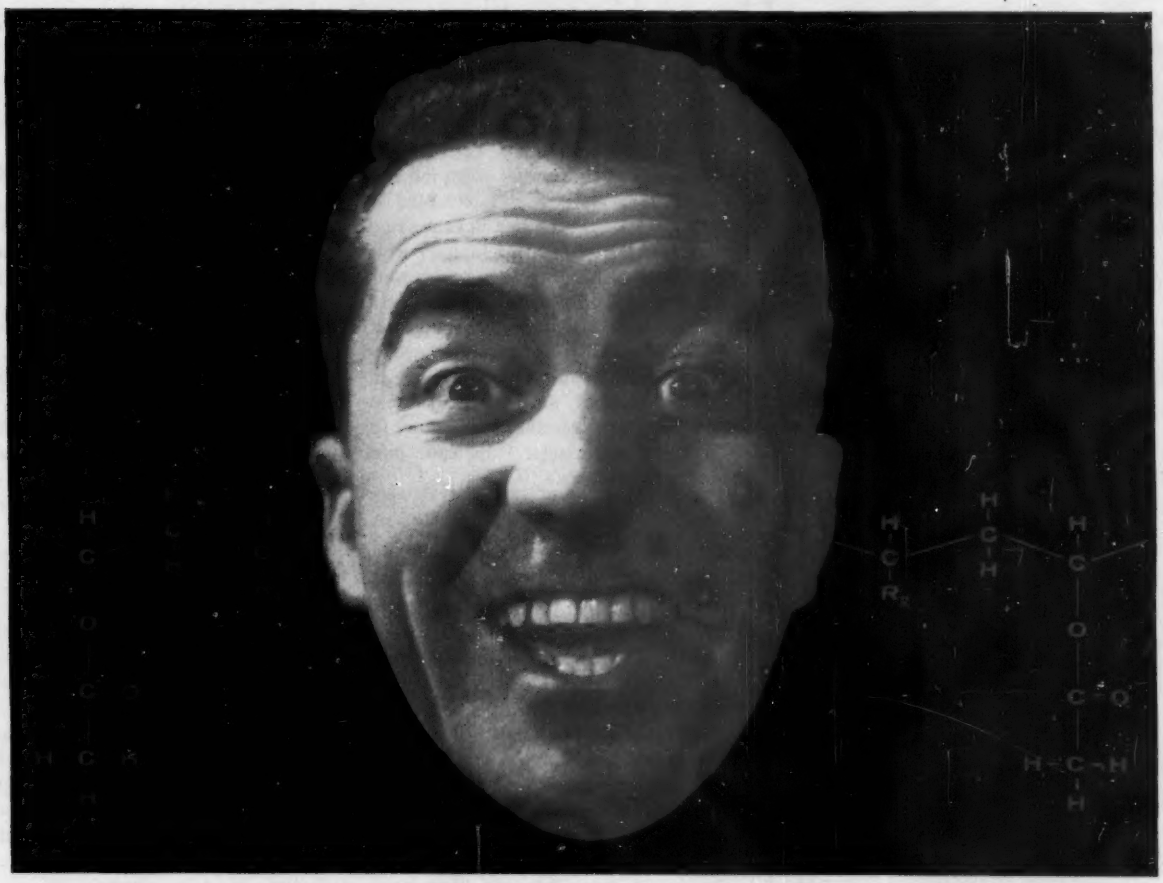
The new plant will be used to desalt well water containing about 1/14 as much salt as the sea water in the Persian Gulf. Processing equipment consists of 15 basic electrolytic ion-exchange units connected in 3 parallel banks of 5 series units. Electrolysis removes up to 40% of the salt entering each unit, reduces total dissolved solids from 3,100 to 450 ppm. as the water passes through each 5-unit series. Because the process leaves dissolved air and some solids in the water, says Ionics, the product has a fresh taste, rather than the flat taste often associated with distilled water.

Principal operating costs of the automatic desalting plant are electricity (15 kwh./1,000 gal. of fresh water produced), occasional replacement of thin plastic ion-exchange membranes (estimated replacement cost: less than 50¢/1,000 gal.).

Sugar Progress: Midway results of

* Ionics, Inc.'s Dr. Edward Mason (*left*), Hawaiian Commercial & Sugar Co. researcher Norman Saliba.

AMAZING VERSATILITY



NEW PVAC TRIPOLYMER EMULSION

What is this new Tripolymer? It's an unique PVAc binder in emulsion form. With an internally plasticizing monomer for permanent flexibility. With polar groups for toughness and adhesive strength. And with this unusual combination of properties:

- Fast adhesion to transparent films and synthetic or natural fibers.
- Locked-in flexibility, no plasticizer migration with aging.
- Clear and rubber-like films that are water resistant.
- Borax compatibility in the emulsion.

Sound interesting? Write for data. Or ask to see a Resyn® specialist from National. He'll be happy to help you explore the possibilities of this new Tripolymer emulsion.

RESIN DIVISION

National

STARCH PRODUCTS INC.

TYPICAL PROPERTIES	
TYPE:	Internally plasticized PVAc emulsion
SOLIDS:	51%
VISCOSITY:	900 cps.
PARTICLE SIZE:	½ micron
pH:	4.0
PLASTICIZER EQUIVALENT*:	30%
LBS./GAL.:	8.9 @ 72°F

*Approximate % of dibutyl phthalate which gives similar flexibility with straight PVAc.

270 Madison Avenue, New York 16 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

PRODUCTION

Ionics' sugar processing experiment has proved, says Hawaiian Sugar Planters Assn., that electrolytic desalting is quite efficient. Basically, the method is used to improve sugar recovery by extracting certain nonsugars (including salts) from the cane juice. The tests were interrupted by the annual year-end halt in cane grinding, will be resumed in January when the next crop is ready for processing.

Second half of the pilot operation will have to run all through next year, says HSPA, before all the needed data are in. Future tests will likely include trials of new types of membranes, new operating techniques for wresting more sugar from cane juice by electrodialysis.

EQUIPMENT

Filter Cartridge: Cuno Engineering Corp. (Meriden, Conn.) offers its new White Micro-Klean filter cartridge for filtrations where fluid contamination must be held to a minimum. The cartridge is particularly recommended for highly alkaline fluids. It's made of white cellulose, bonded with inert resin, and is rated at 5-micron size. Grading of the density, claims Cuno, helps to trap large particles before they reach the fine filter barriers. The cartridge fits most standard filter housings.

•

Pyrometer Controller: Its new Multi-Point pyrometer controller, says Thermo Electric Co., Inc. (Saddle Brook, N.J.), will automatically control the temperature of 4 to 10 separate units. Pulse timer and selector switch connect thermocouples in sequence to a master control unit, which automatically compares each thermocouple voltage with its set point, energizes or de-energizes the corresponding load relay to the process unit. Controller can be set to skip one or more points; usual operating speed is 3 seconds per point, but gears for other speeds are available. Controllers come for all standard thermocouple calibrations; temperature ranges: —400 F to 3250 F (—100 F to 1600 F for resistance bulbs).

•

Coating Unit: American Agile Corp. (Cleveland) has added a mobile unit, the Mark III, to its line for spray and dip coating of plastics on metal (*CW, Dec. 3, '55, p. 93*). Polyethylene can be used with the unit for spray coating and fluidizing (dip coating); nylon and fluorocarbons can be used for fluidizing. The Mark III provides a powder bed 15 in. in diameter and 24 in. deep, operates on compressed air.

•

Radiant Heaters: Intermediate infrared radiant energy—the portion of the spectrum between 1.7 and 3.0 microns—is generated by N. J. Thermex Co.'s (Harrison, N.J.) new Infralite radiant heaters for applications such as drying, curing and sterilization. Use of intermediate-range wave lengths cuts losses from conduction, convection and visible light, increases absorption by most materials to increase the heater's efficiency, says NJT. The new elements emit more than 100 watts of radiant energy per inch of heated length.

•

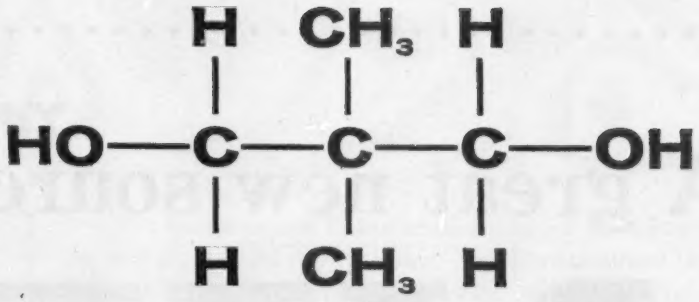
Entrainment Separator: National Carbon Co. (New York) is out with a new corrosion-resistant entrainment separator for removal of liquid particles from gases. Called Type MV scrubber, it is an impingement-type separator made of Karbate impervious-graphite rods staggered in rows within a cylinder. The unit is chemically inert to mineral acids, organic solvents, salt solutions, other corrosives. The scrubber is designed for a gas-approach velocity of approximately 30 ft./second at 1 atm. pressure. Pressure drop is less than 1 in. of water under these conditions, lower under vacuum conditions. Operating temperature range: —40 F to 340 F; pressure: full vacuum to 65 psig. Stock sizes: 6-, 8-, 12- and 16-in. internal cylinder diameters.

•

Thermistor Controllers: Two new dual-range models have been added to Fenwal Inc.'s (Ashland, Mass.) Series 560 thermistor-actuated temperature controllers to increase the operating range, include subzero temperatures. Dual ranges of Model 56006 are: 200-600 F and 100-300 F; Model 56007 ranges are: —100-50 F and 0-150 F. Selector switch on front panel permits instant switching of the ranges without recalibration, other adjustments.

•

Fail-Safe Control: Robertshaw-Fulton Controls Co.'s (Knoxville, Tenn.) No. 997 temperature regulator closes automatically if thermostat fails. It comes in sizes from ¼ to 2 in., mounted in stainless steel frame.



In the production
of polyester resins and plasticizers
and as a polyurethane intermediate

neopentyl glycol

builds stability into the molecule

This new Eastman isobutyraldehyde derivative offers the resin formulator a compact, symmetrical molecule with two methyl side groups. Thus, the use of neopentyl glycol in the production of polyester resins and plasticizers results in improved all-'round stability with excellent resistance to thermal degradation and hydrolysis.

Neopentyl glycol should be investigated either alone or as a modifier of other di- and polyols in the manufacture of polyurethane type polyester intermediates. Ethylene oxide reacts readily with neopentyl glycol to yield polyethers which also show promise as raw materials for polyurethane resins. The two primary hydroxyl groups in neopentyl glycol exhibit excellent reactivity, and polyesters prepared from it appear to impart their own stability to the polyurethanes made from them.

We invite you to send for samples and find out for yourself the advantages neopentyl glycol can give to your product. Write us at Kingsport, Tennessee.

DATA ON EASTMAN NEOPENTYL GLYCOL

Characteristics:
Short chain length
Symmetrical
Reactive

Typical Properties:
Form
Crystalline Solid
Color
White
Melting Point
124°-130°C
Purity
96% Minimum

Eastman CHEMICAL PRODUCTS, INC.,
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Technology
Newsletter

CHEMICAL WEEK
December 8, 1956

Cortisone and hydrocortisone may get some new competition if two new drugs fulfill early promises. Both were discussed last week before the meeting of the American Rheumatism Assn. at the National Institutes of Health in Bethesda, Md.

• Upjohn revealed it had a new hydrocortisone derivative, Medrol (6 methyl-delta-1-hydrocortisone), that's said to be 12-18 times as effective as cortisone and hydrocortisone but lacking their principal side effects. Upjohn researchers theorize that its high potency may be due to the fact that it withstands the attack of liver enzymes.

• Sloan Kettering researchers reported on clinical tests of triamcinolone (Orion), a new Lederle steroid, a fluorinated member of the cortisone family. They tried it on 18 patients, found it "at least as good as or better than" currently available material. No serious side effects were reported. (In their published work on the compound, Lederle researchers found it 13 times as effective as cortisone in rat assays.)

•

There will be more money for basic research in chemistry as well as other sciences if Congress goes along with White House plans to expand federal science grants. The Budget Bureau, insiders insist, has okayed a boost of nearly 50% in funds for the National Science Foundation next year. That would give NSF approximately $58 million to spend in fiscal 1958, compared with $40 million this year. Most of this is to be used to sponsor basic research, but there will be a hike, too, for expanding institutes for training high school science teachers and to buy computers, other research equipment for scientists.

•

At a press conference last week, Scientific Design revealed another source of commercial interest in its xylene oxidation process: SD has engineered a plant for Pechiney in France, but refuses to say anything at all about the status of the engineering plans. It did make the point that Pechiney had obtained an interest in the process some time ago.

SD also helped clarify the agreement it made with Standard Oil of Indiana, which will put the process to work in a 60-million-lbs./year plant (*CW Technology Newsletter, Nov. 24*). Standard purchased exclusive rights to the process; SD is being retained as the licensing agent for it.

•

Mounting difficulties in keeping up with the flood of published results of scientific research will come under attack at an international conference in Washington in Nov. '58. Deadlines for papers: Jan. 31, '57. The conference is being organized by National Science Foundation, Na-

tional Academy of Sciences and American Documentation Institute, acting on recommendations of 50 leading scientists. Aim: to improve dissemination of reports resulting from the "rising tempo of research activity."

•

Metals are under study at the labs of Ford Motor Co. in Dearborn, Mich., as a means of insulating automobile windshields and window glass against summer heat rays.

Engineers there have found that a film of pure gold (about 1/30,000 the thickness of a human hair) filters out the heat-producing rays, lets cooler light beams pass through.

They're also working with silver, aluminum, zinc, copper, vanadium, tantalum, titanium and uranium and with minerals that have unusual optical properties.

•

Chas. Pfizer isn't the only organization that's been working on fermentation processes for making lysine (*CW Technology Newsletter, Nov. 24*). The National Research Council of Canada now reports work on a large number of microorganisms tested for their value in making lysine, says that improved culturing techniques have nearly quadrupled yields.

The council's chief interest in the amino amid: to fortify lysine-deficient wheat; it sees promise as a valuable animal feed in wheat upgraded with the acid.

•

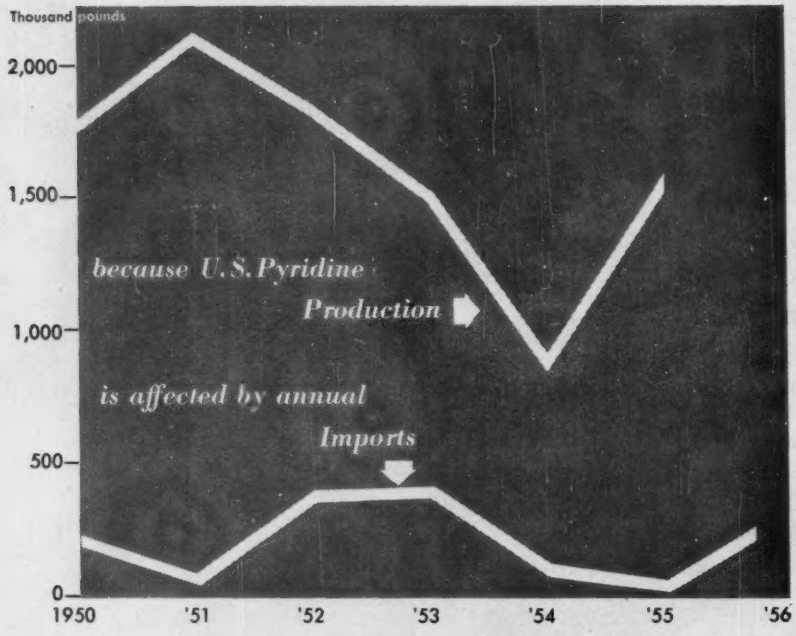
When the Heavy Minerals Co. plant starts up next month (*CW Market Newsletter, Dec. 1*), the U.S. will have its first rare-earths plant utilizing the French-developed caustic cracking of monazite to get rare earths and thorium.

The process involves the reaction of one part ground sand with one part caustic (65-75%) for 3 to 4 hours. Products—insoluble hydroxides of thorium and rare earths, and soluble trisodium phosphate—are separated by filtration. The rare earths are separated from the thorium by selective precipitation with hydrochloric acid. It's essentially the same process used by the Indian Alwaye plant (*CW, Sept. 1, p. 54*) and Orquema in Brazil.

•

California Research will license its new stream-flow measuring process to firms qualified to handle radioactive materials. All that the process requires is a fishing pole, a geiger counter and a small quantity of radioactive isotope.

It measures rate of flow of the stream over any distance. Calsearch feels it's a lot easier than building weirs, measuring cross-sections and going through other involved procedures to get the same information.



The Outlook's Obscured

U.S. pyridine marketers once again face growing competition from imports, and—in light of past competitive experience—may well be asking what this omens for domestic output of the chemical. Underscoring this year's surge of pyridine imports: in the first nine months alone, they totaled approximately 247,000 lbs.*—more than double the 12-month volume of 103,300 lbs. in '54, and far above the 38,500 lbs. imported last year.

Before Niacin: What it means is that pyridine imports are again reverting to what might be termed preniacin patterns. During the 1950-53 period, U.S. pyridine production was strongly affected by imports of the chemical—increased imports pushed domestic output down, and vice versa (*see graph*).

However, in 1954, niacin makers suddenly switched from pyridine to a cheaper synthetic (2-methyl, 5-ethyl pyridine) and effectively knocked out what had amounted to 40% of pyridine's market. Both domestic production and imports of pyridine suffered heavily. The former skidded from 1.5 million lbs. in '53 to 884,000 lbs. in '54; imports dropped from 47,412 gal. in '53 to 12,924 gal. in '54.

Domestic output in '55, however, bounced back to more than 1.55 million lbs., seemed well on the way to a repeat scoring of the 1951 record high (2.1 million lbs.).

Meanwhile, imports slumped still further, hit a low of 4,817 gal. in '55: But a belated, though strong, recovery this year again threatens to brake domestic production.

How '56 domestic output is being affected is not yet entirely clear (official figures will not be available for several months), but at least one industry spokesman cautiously predicts that "output this year will be about the same as in '55, perhaps a little better." At best, this seems to indicate that the rapid climb of U.S. pyridine production has been at least partly checked by the resurging competitive pressure of import material.

Seven pyridine producers are affected: Allied's Barrett Division, Donner-Hanna Coke, Jones & Laughlin Steel, Koppers, Pittsburgh Coke & Chemical, Reilly Tar, and U.S. Steel.

Dollars Count: Though U.S. pyridine producers are undoubtedly bothered by import competition, the picture isn't quite as gloomy as it seems. "Look at the dollar values," say marketers of domestic pyridine. In 1955, sale of domestic pyridine was roughly 40 times greater than the import volume, yet earnings were 188 times greater. The reason: importers had to price their material far below domestic tabs to obtain a competitive advantage.

Relative earnings have not always been so favorable to U.S. producers. In '52, for example, sale of domestic pyridine was 5 times greater than the volume of imports, but earnings were only 3.5 times higher.

This year the earnings/volume ratio still favors U.S. producers, who are getting 75¢/lb.; however, one firm has reportedly signed contracts offering pyridine at 70¢/lb. in an effort to "stabilize prices" (*CW Market Newsletter, Sept. 1*). Currently, import material is selling at a low 45¢/lb.

Pyridine Patterns: Reports published earlier this year indicated that U.S. pyridine production might receive a healthy boost because of two new applications that one pyridine maker has up his sleeve. Spokesmen for that firm are still highly secretive about the projects, but do say that development has been delayed and that a commercial outlet will not develop before late '57. When it does, at least one of the applications will reputedly spawn a major pyridine market.

Hence the end-use breakdown for 2-degree pyridine this year is probably much the same as it was in '55, though significant changes have occurred since '52.

The most abrupt change was, of course, caused by the total disappearance of the niacin outlet, which, in '52, consumed 700,000 lbs. of pyridine—far more than was used in any other application.

Meanwhile, pharmaceutical uses for pyridine grew faster than any other, climbed from 300,000 lbs. in '52 to 450,000 lbs. in '55.

Consumption in the waterproofing of textiles dropped from 400,000 lbs. in '52 to 200,000 lbs. in '54, has stayed at that level.

Rubber accelerator needs have been steady—some 200,000 lbs./year from

*Poundage figures for imported pyridine are only approximate, since many grades, ranging from 2-degree to 30-degree material, are imported, and only total volume figures are reported.

B.F.Goodrich

Cotton Producers Association, Carrollton, Georgia.

Rigid Koroseal pipe used for permanent installation where corrosion ruins metal in six months

SULPHURIC ACID used in making super-phosphate used to be carried in heavy duty black iron pipe from tank to mixing station. The strong corrosive action of the acid made replacement of the pipe necessary every six months, causing expense for new pipe and lost time from production.

Then they switched to Koroseal rigid PVC pipe and, according to the plant superintendent, they expect it to be a "...permanent installation". The corrosion problems you have can also be solved by B. F. Goodrich high impact rigid Koroseal PVC pipe. In addition to handling corrosives safely, Koroseal pipe has the strength to take a beating.

Koroseal pipe is unaffected by most acids and alkalies as well as oil, alcohol and salt solutions. Many solutions that eat away metal piping can be safely carried by Koroseal.

Easy to use with Koroseal fittings and valves, this rigid pipe can be threaded on any standard pipe threading equipment.

Koroseal pipe is available in various pressure schedules. Koroseal PVC comes in pipe, tubing, fittings, valves, rod, sheet and custom extrusions.

For full information on rigid Koroseal products fill in the handy coupon. Distributorships for certain areas are still open. Inquiries invited. *B. F. Goodrich Industrial Products Company, Marietta, Ohio.*

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Xtracts

USEFUL INFORMATION ABOUT REACTIVE CHEMICALS FROM DU PONT ELECTROCHEMICALS DEPARTMENT

Versatile Methylene Chloride Chases Paint and Bugs Too

With a fortunate combination of properties, including high solvent power for many organic compounds —both those of non-polar and polar nature—methylene chloride finds its way into many seemingly unrelated applications in a wide variety of industries.

For instance, the paint and varnish industry uses methylene chloride as the major constituent of highly efficient nonflammable paint remover. In combination with additives, such as wetting agents and evaporation retardants, it has been found very effective on a wide range of finishes including the newer resins.

In the packaging field, methylene chloride plays an important role. In the low-pressure aerosols used to disperse insecticides, deodorants, etc., it serves as both a diluent for the more powerful propellents and as a solvent for the concentrate. This solvent action helps minimize the danger of plugging the dispensing nozzle.

But methylene chloride has many other uses . . . it is used in the manufacture of safety-type photographic film, in cleaning compositions, as a solvent for cloth, paper and leather coatings, and in refrigeration and air conditioning installations. If you would like to know more about the applications of this versatile hydrocarbon, just check and mail the coupon below.

Formaldehyde—The Chemical Button

Formaldehyde is one of the most reactive organic chemicals. It reacts with a wide variety of organic and inorganic compounds to make many interesting and useful derivatives. It takes part in many reduction, addition, condensation, and polymerization reactions. Its methylene ($-CH_2-$) group functions as a "chemical button" to link similar or dissimilar molecules.

High purity 50% and 37% formaldehyde is available at low cost from Du Pont. For more information about its properties, just check the coupon below.

"Albone" Gives Modern Furniture a Beauty Treatment

The modern taste for light-colored woods in contemporary furniture poses its own special problems for the furniture manufacturer. Here, "Albone" hydrogen peroxide plays an important role in securing these distinctive finishes.

"Albone" and "Albone" bleaching solutions are applied usually by spraying, although brushing, wiping or dipping, are sometimes used. The bleaching process requires the application of alkali and peroxide on the surface of the wood. For simplified operations, the two are applied as a single solution. They may also be applied separately.

Currently, bleaching is being used to obtain a light base wood, which is then stained or toned to produce uniform, light, natural colors. In this way, the natural beauty of the wood grain is retained.

Finishing problems associated with wood bleaching are solved by the use of proper drying cycles, neutralizing and/or reducing agents. Many of the leading furniture manufacturers are using "Albone" to help them produce the light, natural finishes now in vogue.

For more complete details regarding solutions, methods of application and safe handling of "Albone" fill in and mail the coupon on the left.

E. I. du Pont de Nemours & Co. (Inc.)
2526 Nemours Bldg., Wilmington, Del.

Please send me literature and information on: (CW-12)

- ☐ Methylene Chloride
- ☐ Sodium
- ☐ "Elvanol" Polyvinyl Alcohol
- ☐ "Albone" Hydrogen Peroxide
- ☐ Formaldehyde

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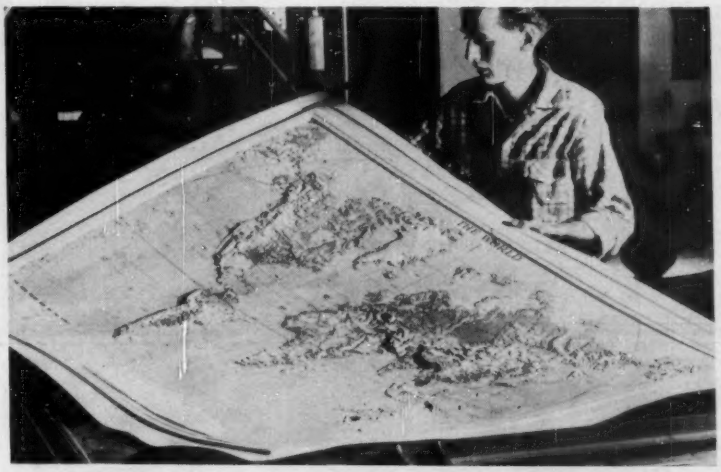
'52 through '55. Demands for dye manufacture and miscellaneous uses both slumped, then recovered; pyridine used in dyes dropped from 180,000 lbs. in '52 to 100,000 in '54, jumped to 150,000 in '55; demand for miscellaneous uses, in the same period, dropped from 220,000 lbs. to 150,000 and climbed back to 200,000 lbs. in '55.

Percentagewise, here's the '55 market breakdown for 2-degree pyridine: pharmaceuticals, 37% of total U.S. consumption; waterproofing of textiles, 17%; rubber accelerators, 17%; dyes, 12%; miscellaneous, 17%.*

Looking ahead, applications that industry experts say will likely be especially important in pyridine's growth: use as a solvent in chemical syntheses, as an acid acceptor to control chemical side reactions and to minimize end-product degradations; catalytic uses; as a filtration aid; as raw material in manufacture of quaternary compounds and other

*Total U. S. 2-degree pyridine consumption includes imported material, excludes exports.



Vinyl Covers the World

VACUUM-FORMED from rigid vinyl, a new relief map of the world is another potentially large outlet for the fast-growing plastic.

Lithographed in 10 vivid colors and including nearly 3,000 place names, the maps are going into schoolrooms, executive offices, homes.

Selling points; easy visualization of mountain barriers, light weight (2 lbs. for a 61x42-in. map), easily cleaned with a damp cloth, trade routes, etc., can be crayoned in.

chemicals—particularly those that exhibit biological activity.

Two factors stand out in the beclouded pyridine situation. First, forecasts of production patterns are all but impossible because little can be foretold about pyridine imports except that right now they're going up. (Pyridine imports are especially confounding because the number of countries that export the chemical to the U.S. varies widely; in '55, only the United Kingdom shipped pyridine to the U.S.; in '52, eight foreign nations marketed here.)

Second, new uses are needed to fill the hole left by niacin's desertion, but so far only optimistic promises are in sight. What, then, is in store for pyridine in '57? The answer, say most marketers, won't come until '57.

Syndets Soar

It's no surprise that synthetic detergent sales this year continue to climb at a fast pace and at soap's expense. The only question that periodically arises concerning these well-established trends is this: How big are the respective gains and losses?

The latest quarterly sales census conducted by the Assn. of American Soap & Glycerine Producers, with 74 companies participating, reveals that synthetic detergents cornered 67% of the cleaning market during the first nine months of '56, racked up total sales of more than 2.06 billion lbs. valued at about $460.6 million; it's an 18.2% tonnage increase and a 13.1% boost in dollar value, compared with '55.

Liquid detergent sales climbed to nearly 194.9 million lbs.—82% ahead of sales in the same period last year.

Combined sales of solid and liquid soaps during the first nine months tallied about 989.3 million lbs. valued at more than $241.5-million. These represent a 6% tonnage drop and 3% dollar-value decline, compared with last year.

Taken together, tonnage sales of soaps and syndets averaged out to a 9% increase over the '55 record; total combined soap and synthetic detergent sales during the first three quarters of '56 amounted to more than 3.05 billion lbs. (worth $702.2 million), compared with 2.8 billion lbs. (worth about $656.6 million) in the same period of '55.

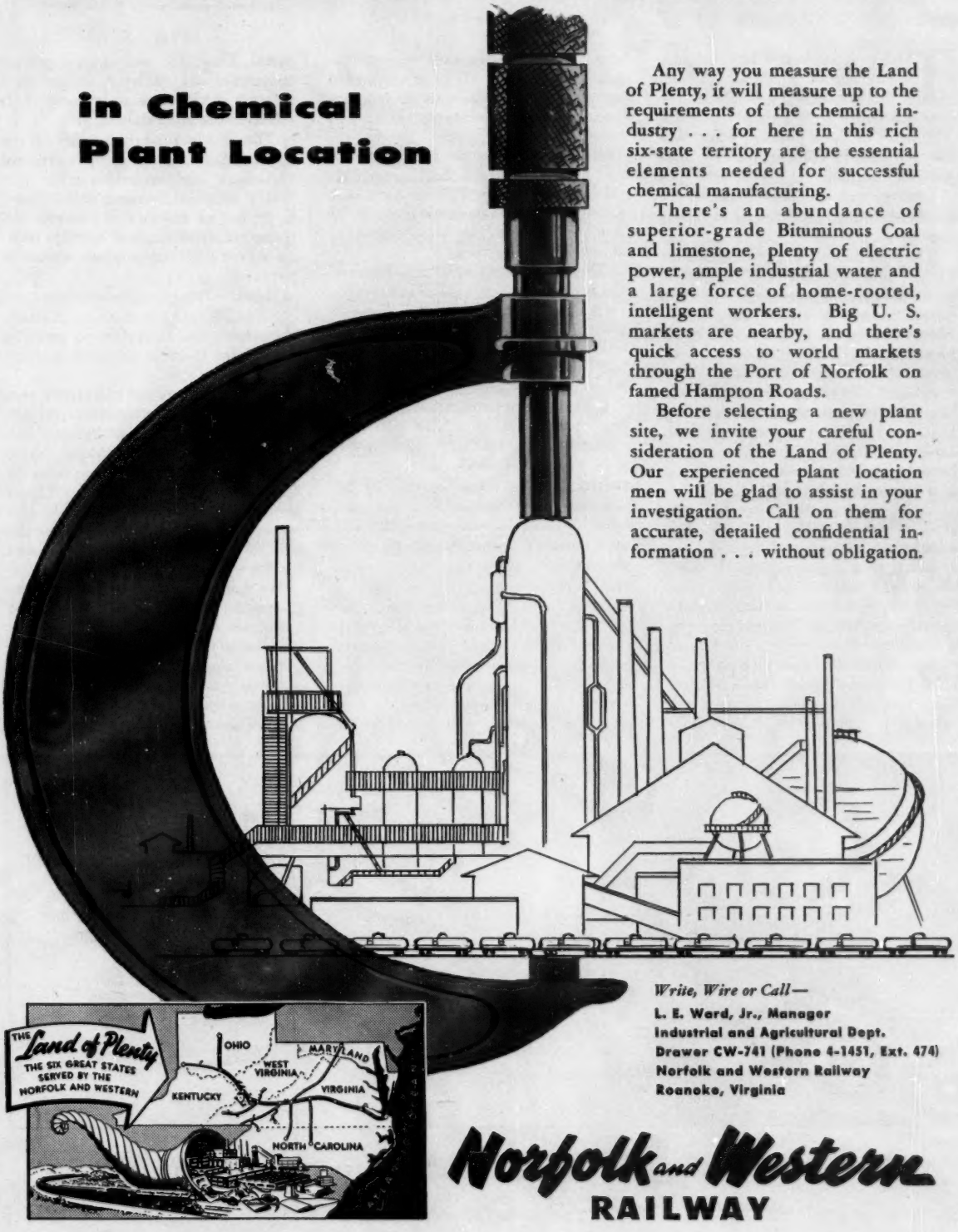
ACCURACY

in Chemical Plant Location

Any way you measure the Land of Plenty, it will measure up to the requirements of the chemical industry . . . for here in this rich six-state territory are the essential elements needed for successful chemical manufacturing.

There's an abundance of superior-grade Bituminous Coal and limestone, plenty of electric power, ample industrial water and a large force of home-rooted, intelligent workers. Big U. S. markets are nearby, and there's quick access to world markets through the Port of Norfolk on famed Hampton Roads.

Before selecting a new plant site, we invite your careful consideration of the Land of Plenty. Our experienced plant location men will be glad to assist in your investigation. Call on them for accurate, detailed confidential information . . . without obligation.



Write, Wire or Call—

L. E. Ward, Jr., Manager
Industrial and Agricultural Dept.
Drawer CW-741 (Phone 4-1451, Ext. 474)
Norfolk and Western Railway
Roanoke, Virginia

Norfolk and Western RAILWAY

THORIUM

URANIUM'S INTERESTING STEPCHILD

Teddy Roosevelt was President. The age of Victorian splendor was in full swing. And incandescent gas lamps were lighting America. The heart of these glowing lamps was the gas mantle – made, for the most part, of thorium.

Lindsay was a famous name in the gas-light era, a major producer of gas mantles.

The manufacture of gas mantles calls for the impregnation of a knit fabric cone of ramie or rayon with thorium nitrate and cerous nitrate. The organic fiber is burned off, leaving a relic structure of thorium and cerium oxide which glows white hot in a gas flame.

Around 1920, gas illumination was largely supplanted by electric lighting. Demand for thorium dropped. Then came the atomic age. Thorium again became important because of its value as a reactor fuel breeder.

At the present, there are two systems in which thorium can be used as a fuel material breeder. One is the use of metal or a thorium-bismuth alloy; the other, a thorium oxide slurry reactor. Both procedures are being investigated by the AEC and private industry. It is believed that at the assumed burn-up rate of thorium oxide (one pound of ThO_2 for six megawatt hours of electrical energy) the thorium-rare earth industry is probably capable of handling domestic demands without excessive expansion. Thorium looks good as a reactor fuel for private industry because it is much more plentiful and economical than uranium.

So much for the Buck Rogers stuff . . . what's ahead for thorium, excluding the energy field? The answer to that is "plenty" and chances are it can be of immense value to you – it already is in a number of industries.

The most common thorium salts are the nitrates, oxides, fluorides and chlorides. Lindsay produces all of them in purity ranges from that required for ordinary technical use to the most critical "reactor" grade where extremely high purity is a must.

Let's see how some of these salts are being used in industry. Perhaps you'll see a potentially profitable use for them in your own operations.

$Th(NO_3)_4 \cdot 4H_2O$ – Manufacture of incandescent gas mantles. A starting material for other thorium compounds and thorium metal. Nitrate is the standard commercial thorium salt.

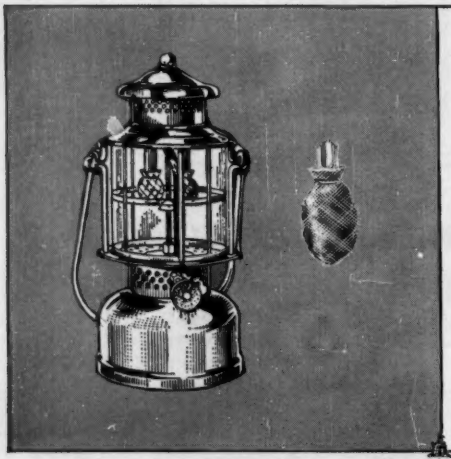
ThO_2 – Thorium oxide has the highest melting point of any metallic oxide (3220°C) and has use as a refractory material. It is also used with lanthanum oxide in the production of "rare-element" optical glass for unbelievably accurate aerial camera lenses. It is a source material for making thorium metal. The AEC and several private companies are studying its use in a thorium oxide-water slurry reactor. It has some use as a catalyst.

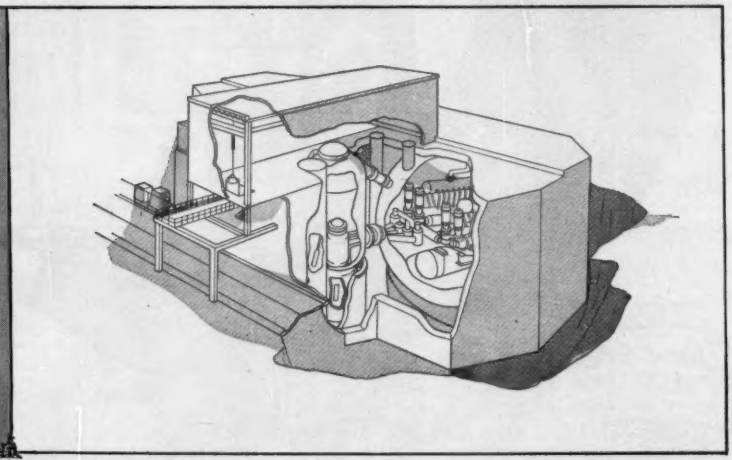
Thorium-magnesium alloys have high strength, good creep resistance and elastic modulus values in the 600-700°F temperature range and are used in jet engine castings, supersonic airframe constructions and satellite rockets where high temperature service is required.

Thoriated tungsten (tungsten containing 1 to 2% ThO_2) is used as a filament in electron tubes and as non-consumable electrodes in inert gas-shielded arc welding.

Lindsay is the oldest and largest producer of thorium compounds for the government and private industry but we don't make thorium metal. Naturally, since we've been in the business 54 years, we've learned a good deal about this remarkable, versatile element. Data is available to you and the counsel of our technical staff is yours for the asking.

We feel certain that thorium has enormous potentials in a variety of industries and we want to share our knowledge with you. If you think that thorium chemicals may be useful in improving one or more of your products or processes – or in the development of new products – let us be of help.





PLEASE ADDRESS INQUIRIES TO:

LINDSAY CHEMICAL COMPANY

270 ANN STREET • WEST CHICAGO, ILLINOIS

Market Newsletter

CHEMICAL WEEK
December 8, 1956

The government has decided (though perhaps not finally) against altering its present natural rubber stockpile rotation policy, despite fears of fabricators that a shortage looms because of the Suez Canal blocking. In effect, the decision is a rejection—after some vacillation (*CW Market Newsletters, Nov. 10, Nov. 24*)—of the Rubber Manufacturers Assn.'s suggestions that the amount rotated be increased to help consumers, and that industry be given more time to replace the material.

Rubber traders opposed the manufacturers' plan, insisted that the Suez condition would merely temporarily delay shipments here. Defense Mobilizer Arthur Flemming cited the industry's "conflicting advice" on the shortage prospects in his ruling that the "present situation does not warrant a change" in the stockpile procedure.

Tire and other rubber goods producers aren't too bitter over the turndown, however. Flemming added that the government would reconsider temporary postponement of rubber stockpile deliveries if shipping is delayed to such an extent that "natural rubber shortages are imminent."

Although rubber industry sales this year are falling a little short of expectations, the outlook is tinged with optimism. This was underscored by U.S. Rubber's President H. E. Humphreys, Jr., last week at a preview of the company's new exhibit hall in New York's Rockefeller Center. Total industry sales for 1956, said Humphreys, will be about $5.5 billion, almost identical to last year's. For '57, he forecasts a record $6 billion in sales, predicts an annual rate of $7 billion by '60.

•

The parade of price increases effective Jan. 1 continues to lengthen. Monsanto will post hikes ranging from 25¢ to 30¢/cwt. on several sodium and calcium phosphates. Products affected include dicalcium phosphate dihydrate and disodium phosphate dihydrate (each up 25¢/cwt.); dicalcium phosphate anhydrous and calcium pyrophosphate (up 30¢/cwt).

Reasons behind the advances sound familiar: increases in raw material prices during the year (particularly for lime and soda ash); rising labor costs.

Potassium nitrate prices, too, will be increased next month because of mounting production costs. Stauffer Chemical initiates the move that will boost the price of the material 25¢/cwt., set a new c.l. tag for granular nitrate (in bags) at $9.50.

On the other hand, fumaric acid consumers won't have to wait until Jan. 1 to pay more for their needs. Prices on both purified and industrial grades of the acid went up 1½¢/lb. last week. The general advance

establishes the c.l. price on purified material (used in the food trade as a leavening agent and acidulent) at 33¢/lb., technical material at 27¢.

Titanium mill product prices, moving counter to the general upward trend, are being reduced again. For the second time this year, Titanium Metals is posting reductions of 6-8% on sheet, strip, bar and billet, and certain sizes of wire.

The metal, incidentally, continues in heavy demand, with orders absorbing just about all production from the country's rapidly expanding facilities. TMCA, for example, is upping sponge capacity at its Henderson, Nev., plant to 9,000 tons/year, and ingot capacity from 6,000 tons/year to 11,000.

•

The recent cut in the Brazilian floor price on fatty carnauba grades plus a seasonal hand-to-mouth ordering by users continues to exert an adverse effect on spot prices here. Crude No. 3 Ceara and Parnahyba quotes, for example, are down another 1¢/lb., establishing ranges to consumers of 67-68¢/lb. on the former, and 68-69¢/lb. on the Parnahyba.

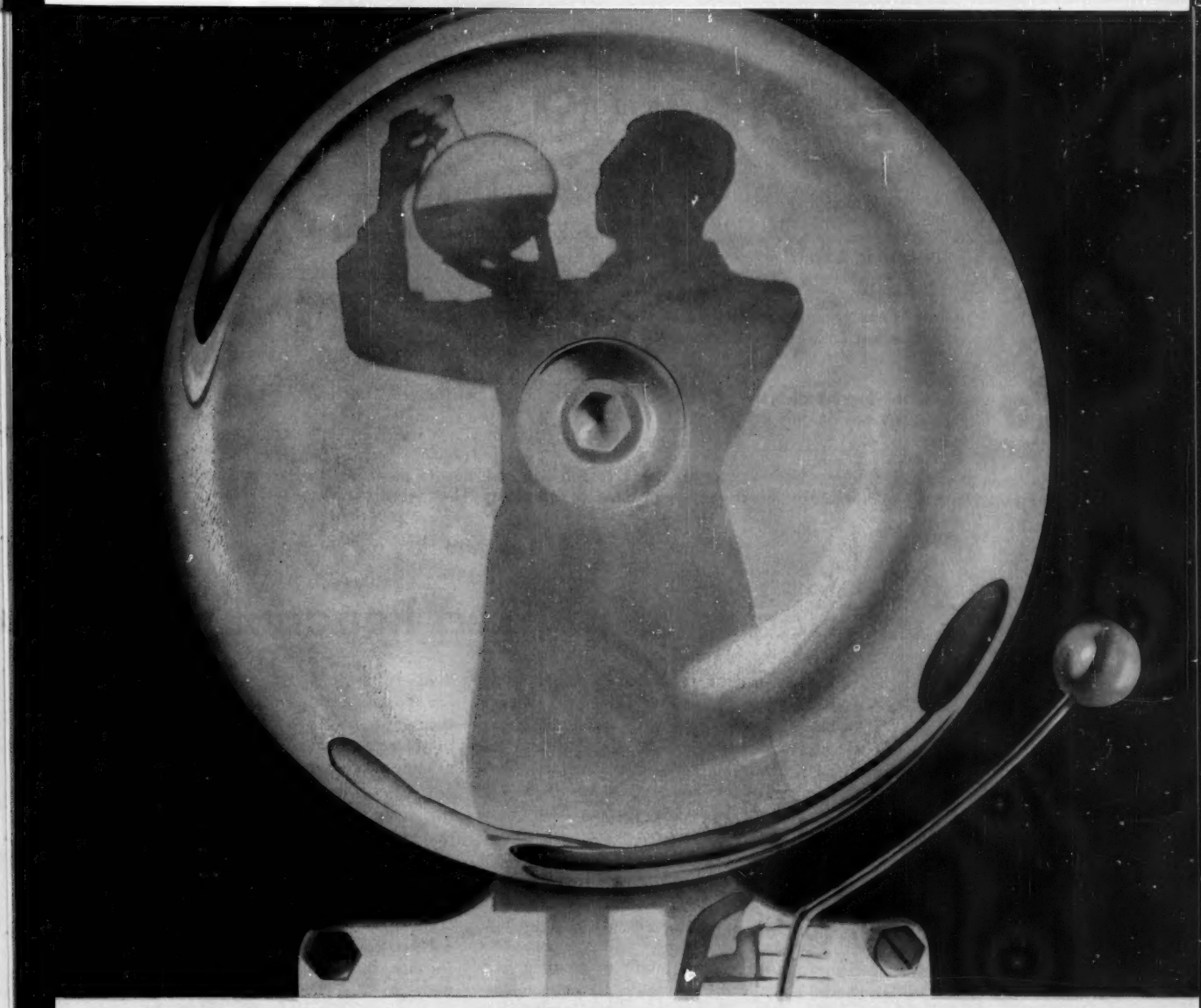
The reductions quickly followed reports that prices on the Brazilian market are up slightly (with the new crop coming in), but observers here, noting the holiday-depressed demand, see little chance that the advances will be reflected in the U.S., at least until early in the new year.

•

Du Pont's fourth—and newest—U.S. Freon plant is rolling along in high gear. First bulk shipment (37,000 lbs.) from the multimillion-dollar Antioch, Calif., installation, will be on its way next week to G. Barr & Co. (Los Angeles). Still under construction at the plant, but due for early completion, are units for production of tetraethyl lead antiknock compound (*CW Market Newsletter, Aug. 7, '54*).

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending December 3, 1956

	Change	New Price
UP		
Gallic acid, N.F., vii bbls., 1,000-lb. lots, lb.	$0.20	$2.00
Mercury, metal, 76 lbs. per flk., net flk.	2.00	255.00
Linseed oil, raw, dms., c.l., N. Y., lb.	0.003	0.173
DOWN		
p-Dichlorobenzene, dms., c.l., F.O.B., wks., lb.	$0.025	$0.12
Stannous chloride, anhyd., dms., wks., lb.	0.006	0.982
Stannic chloride, anhyd., dms., wks., lb.	0.004	0.842



matching wits with fire

The fire alarm bell can be the plant equipment most costly to operate.

That is reason enough for Celanese research to develop materials that have reduced the threat of fire in plants and products.

Take Cellulubes, for instance . . . this series of hydraulic fluids and lubricants minimize the possibility of fire and explosion in die casting operations, hydraulic equipment and air and gas compressors.

And now Celanese plasticizers such as Celluflex CEF which impart fire-resistance to varnishes, lacquers, polyurethane foams, thermosetting plastics and polyester resins, thus assuring greater safety in a wide range of end-products.

Whether you must match wits with fire . . . improve a product or search for a better processing method . . . you will be interested in how Celanese research and chemicals can shortcut your work by supplying practical answers to specific problems.

Write to: Celanese Corporation of America, Chemical Division, Dept. 552-L, 180 Madison Avenue, New York 16, New York.

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CHEMICALS

.....for improved products

Agricultural, automotive, aviation, building, electrical, paper, pharmaceutical, plastics, surface coatings, textile.

Here's what they say about mixed truckloads:

- **"The practice of selling mixed truckloads on the part of large manufacturers is hurting the distributor and is definitely a price-cutting feature."**
  President of a Midwest distributing company

- **"If the distributor starts griping about mixed truckloads, he will only excite our wrath. We'll do all we can to help him acquire other l.c.l. business, but mixed trucks are a different breed of cats."**
  Sales manager, large chemical producer

- **"The big guy with the biggest diversity of material will come out on top if mixed truckloads becomes a general practice. The little guy can do only one thing—cut prices."**
  Sales manager, medium-size chemical company

- **"We think it's a bad practice, but everyone is doing it and will continue to do it. As long as one manufacturer bows to customer pressure, all of them will have to go along. They were crazy to ever start it."**
  Vice-president, Western distributor

Mixed Truckloads Stir Mixed Reactions

The growing practice of delivering less-than-carload quantities of related chemical products in one fully loaded truck (mixed truckload), and charging the consumer carload prices, is generating some heated discussions among both distributors and producers. How highly controversial the subject has become in just the last few months is revealed in a just-completed CW check with many of the industry's top chemical handlers.

Here are some of the findings:

- The practice is not a new one, was started back in the '20s but almost disappeared during World War II. The current competitive situation has revived the practice and is nourishing it.
- Most distributors don't like it, feel that it's cutting into their less-than-carload (l.c.l.) business.
- Many chemical producers don't like it either but insist they've been forced into it by their competitors.

At present, it's limited to only a small segment of the industry, but many fear that it will spread and result in a deterioration of traditional carload and truckload markets.

Biggest supporters of the idea are the producers with a broad line of chemicals, but some active promotion is originating with truckers who find it a good way to cut into the railroads' business.

Old Hat: Allied's Solvay Process Division reputedly started the practice of mixed truckloads (though some credit Blockson Chemical) nearly 30 years ago when it offered mixed carloads of caustic, soda ash and calcium chloride at carload prices. Dow and other major producers soon followed suit. The practice fell off as materials became scarcer in World War II but reappeared about three years ago with the switch from a sellers' to a buyers' market. It has been chiefly used for liquids and solvents because their generally higher unit price makes multiple handling economically feasible. Recently, however, it's been pushed vigorously to sell dry solids, such as phosphates.

Most distributors dislike the idea of mixed truckloads, feel that producers are stepping into what has been their mainstay—l.c.l. business—in a way that makes it hard for them to compete profitably.

Said one Midwest distributor: "The practice of selling mixed truckloads and compartment-tank-car loads by the large manufacturers is hurting the distributor and is definitely a price-cutting feature. To compete with it, the distributor is being forced to either equip his operation for selling on mixed-load basis or eventually be put out of business as his profit margin is squeezed. We haven't gotten into it yet, but we can see that the cards are stacked for competing in that particular field, so we're planning to get compartment tank wagons soon just to hold our own. Large manufacturers are more or less taking over the field themselves on large bulk movements of materials, meaning the distributor is being taken out of the jobber field."

In answer to this objection, most of the major chemical companies claim that mixed truckloads constitute only a very small part of the business, that the practice is confined by its very nature to small compounders, sanitary chemical producers and the like, who use related chemicals in their work. Further, they insist, distributors have more to lose than gain by railing against mixed truckload business. In the first place, the distributor can pick up orders for mixed truckloads, send them on to producers who ship direct and give the distributor a 5% service charge on the order. Second, some producers claim that they go after the truckload business and refer the l.c.l business to distributors. By questioning the practice of mixed truckloads, distributors will only upset this balance, they say.

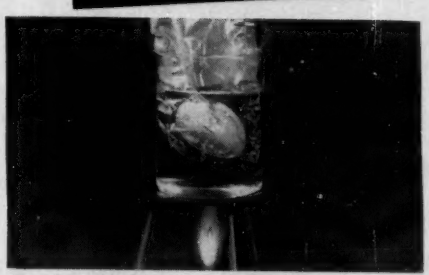
In reply, one distributor said: "The next piece of l.c.l. business referred to me by a chemical producer will be my first. And I've been at this business over 20 years."

A sales manager of an Eastern chemical firm had this to say: "Most distributors can't handle low-profit, bulk items any more. It was a mistake to let them in that business. Sure, they'll suffer some loss of business

Spencer Service is Wonderful

"He won't wait for the rest of the train... his customer needs ammonia in a hurry!"

NEED IDEAS?



Food cooked in "see-through" packages is just one new idea made possible by Spencer Chemical Company's new high-density polyethylene, "Poly-Eth Hi-D." "Hi-D" film resists heat up to 240°, yet has clarity and gloss of ordinary polyethylene.

SPENCER

America's Growing Name In Chemicals

SPENCER PRODUCTS: "Poly-Eth" Polyethylene • Ammonia (Commercial and Refrigeration Grade) • Aqua Ammonia • 83% Ammonium Nitrate Solution • Synthetic Methanol • Formaldehyde • Hexamine • "Mr. N" Ammonium Nitrate Fertilizer • SPENSOL (Spencer Nitrogen Solutions) • Nitric Acid • FREZALL (Spencer Dry Ice) • Liquid CO_2 • Cylinder Ammonia.

SPENCER CHEMICAL COMPANY

GENERAL OFFICES: Dwight Bldg., Kansas City 5, Mo. DISTRICT SALES OFFICES: 500 Fifth Avenue, New York City; First National Bank Bldg., Chicago, Ill.; Candler Bldg., Atlanta, Ga.; Union Planters National Bank Bldg., Memphis, Tenn.

through mixed truckloads, but should they have been involved in it at all? All they can get out of pushing the idea is 5%, and they can't live on that."

Mixed Allegiance: Not only distributors dislike the idea of mixed truckloads, however. Many chemical producers also are against it. Said the vice-president of one large chemical company: "We hardly look upon the resurgence of this practice as a harbinger of a golden age in chemical sales. It reappears in times of great competition, is something we don't like to get into; but as long as our competitors do it, we must do it."

Said another vice-president: "We think it's a bad practice, but there's no question about its increasing. It represents a deterioration of the market. People who were carload buyers became less-than-carload buyers, and producers pile up the incidental expenses involved in routing, etc."

Asked why the practice was increasing, he attributed it to these factors: the competitive situation, some heavy promoting by trucking concerns, and the fact that customers, aware of the practice, are initiating it.

What appears to worry distributors and producers most about the prac-

WIDE WORLD

BACKLOG of accumulated cargo must be moved as . . .

Delays Hit Docks

Although the dock strike is at least temporarily over, the aftermath will continue to be felt for several weeks. The pile-up of cargo waiting to be handled, plus the burden of new shipments, is creating serious bottlenecks. Some shipments may not clear through strike-stricken ports until early January.

Will the strike be resumed after the injunction period* ends? Best guess is that an agreement will be reached by then. There's strong federal pressure being exerted for a strike solution, but any final settlement between the International Longshoremen's Assn. (Ind.) and the New York Shipping Assn. still requires resolution of such major points of disagreement as a contract to cover all East and Gulf Coast ports instead of separate, port-by-port contracts, and limits on cargo slingloads. Chances are, however, that the ILA's all-port demand will be ruled a nonbargainable issue by the courts. NYSA, in seeking such an order, has claimed it cannot bargain for other ports.

If the strike is resumed, chemical companies, like many other shippers, can again expect immobilized cargoes, plant closings and costly, emergency rail shipments. And come what may, the settlement is almost sure to result in higher shipping costs.

*The walkout ended when the government obtained a 10-day injunction against the strike under the provisions of the Taft-Hartley Act. An extension of the injunction to the full 80 days allowed by law is expected before the end of this week.

ATLAS chem-memos

CHEMICALS DIVISION
ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE
Atlas Powder Company, Canada, Ltd., Brantford, Ontario, Canada

Tween® 80 makes dozens of o/w emulsions

When it comes to making oil disperse in water, TWEEN 80 is about as close to a jack-of-all-trades as you can find. Its chemical name is polyoxyethylene sorbitan mono-oleate. On the Atlas HLB scale, it has a value of 15 . . . which means that it has a high oil "solubilizing" power. This quality makes it applicable to dozens of different products in which oil and water must be mixed.

Many water-insoluble oils, such as flavor, vitamin, perfume and other volatile oils, can be made into clear "solutions"— actually transparent water dispersions—by using TWEEN 80 as a solubilizer.

Its oil-in-water emulsifying action gives TWEEN 80 considerable ability as a detergent ingredient in shampoos, waterless hand cleaners and similar products. A sizeable amount of TWEEN 80 goes into cutting oils and self-polishing floor waxes, too.

In ointments, creams and lotions, TWEEN 80 does double duty. It is used in oil-in-water products . . . and it also lends a hand in water-in-oil emulsions as an assistant to an oil-soluble emulsifier (such as the SPAN® products of Atlas) to reduce the amount of milling or homogenization needed for good dispersion.

If you make emulsified products, TWEEN 80 is a valuable material to know. We'll be glad to send technical data and test samples.

How sorbitol improves cosmetic creams

Sorbitol is particularly effective as a means of stabilizing water content of cosmetic creams, especially those emulsified with soap. As a humectant, sorbitol has low equilibrium moisture content and slow rate of moisture gain or loss. These qualities retard dryness and formation of crust when the cream is left exposed to the air.

Sorbitol, however, contributes other important cosmetic effects in both W/O and O/W types of creams. It provides smoother application of the cream. By its humectant nature, it releases water more gradually from the cream . . . lending a spreading or lubricating action that prevents "roll." It also gives a desirable smooth, dry feel when the cream is applied, in contrast to excessively hygroscopic materials that give a damp or sweaty effect. Its heavy body is advantageous in making foundation creams that afford good adhesion for powder.

Write us for technical data and sample of SORBO® 70% sorbitol solution.

ATLOX® emulsifiers... favorite in weed-killers

From dandelion to mesquite, weeds take a beating today from the army of chemical herbicides. Atlas has a part in this—for we produce the large and versatile line of ATLOX emulsifiers used in making concentrates of 2,4-D and 2,4,5-T weed-killers, and in formulating other types of pesticides. These emulsifiers make toxicant-solvent mixtures easily dispersible in water for effective application.

The ATLOX family of emulsifiers is the leading choice of agricultural pesticide manufacturers the world over. If you're in the insecticide and herbicide business, it will pay you to get acquainted with the ATLOX line . . . and to call on us for help on your own formulating problems.

tice is not so much what is happening now as what it can lead to—mixed loads of unrelated items from two or more plants with truckload or carload prices on the components. This, many feel, isn't justifiable on the basis of reduced handling or freight costs. Mixed truckload orders usually require heavy routing or a central warehouse; and if a central warehouse is involved, the manufacturer is really competing directly with his distributor. Where this situation exists, the mixed truckload pitch is usually just a gimmick to cut prices.

At present, mixed truckloads apparently give a bigger advantage to chemical users located in areas remote from warehousing or production facilities. For example, a phosphate and wetting agent user in Atlanta (where there is little storage of such products) can buy a mixed load of detergent materials, pay about $1.50 cwt. for c.l. freight rather than the $3 l.c.l. rate. In New York, where goods price differential between l.c.l. and c.l. is only 40¢/cwt., the advantages of mixed truckloads aren't as imposing.

Another regional factor that has helped stimulate mixed loading is the practice of "stop off" truck deliveries. For instance, a shipment of 15,000 lbs. of material from a producer in Cleveland to Boston, Mass., might be combined with, say, 10,000 lbs. headed for nearby Worcester Mass. For the "pool" truck or stop-off, there is an extra $15 charge for handling, but the trucking company charges a truckload rate, which is split between the two buyers with a savings in freight in addition to the difference in cost between c.l. and l.c.l. The ones obviously enjoying the biggest advantage from mixed truckload selling will be those with the widest line of goods. Others may have to do one of two things to meet the competition: go out and purchase material to round out their lines (thereby cutting down profits); or cut prices.

There's not too much opposition to mixed truckloads yet, simply because it applies to a limited field. But look for it to become a storm center as competition drives more companies into it. As one distributor prophesied: "As the surpluses from recent expansions start piling up, you'll see more mixed truckload shipments. But we've been through it before—so I guess we'll weather it again."

The Use of V-C Phosphites as

STABILIZERS

In numerous combinations and systems needing stabilization, the organic phosphites have won rapid and widespread acceptance. Plastics, lubes, resins, GR-S rubbers and a variety of other chemical structures are better products today because of phosphite stabilization.

Many trialkyl, dialkyl and alkyl aryl phosphites are available for use as stabilizers. We suggest you consider the special advantages of those listed in the table below:

Stabilization Use**	Triiso-octyl	Tri-2-ethyl-hexyl	Tris (2-chloro-ethyl)	Mixed 2-ethylhexyl octylphenyl
Vinyl Plastics	✓	✓	✓	
GR-S Rubber				✓
Esterification			✓	✓
Lubes	✓	✓		
Resins			✓	
Cellulose Thermoplastics	✓	✓		

**Some of these uses may be covered by patents. Nothing contained herein should be construed as a recommendation to use any product in conflict with existing patents.

Virginia-Carolina Chemical Corporation produces a complete line of phosphites for use as stabilizers. The results of extensive research and development in this field by experienced V-C personnel are available to assist you in your stabilization problems. Let's talk it over at your convenience. In the meantime, write for samples and brochures.

THE V-C LINE

Phosphorus, Elemental
Phosphoric Acids
Phosphoric Anhydride
Disodium Phosphate
Trisodium Phosphate
Tetrasodium Pyrophosphate
Sodium Tripolyphosphate
Sodium Metasilicate
Ferrophosphorus
Slag
Dimethyl hydrogen phosphite
Diethyl hydrogen phosphite
Dibutyl hydrogen phosphite

Bis(2-ethylhexyl) hydrogen phosphite
Trimethyl phosphite†
Triethyl phosphite†
Triisopropyl phosphite†
Tributyl phosphite†
Trihexyl phosphite†
Triisooctyl phosphite†‡
Tris(2-ethylhexyl) phosphite†
Tris(2-chloroethyl) phosphite

2-Ethylhexyl octylphenyl phosphite
Diethyl ethylphosphonate
Dibutyl butylphosphonate
Bis(2-ethylhexyl) 2-ethylhexylphosphonate
0,0,0-Triethyl phosphorothioate
0,0,0-Tributyl phosphorothioate
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and other organophosphorus compounds and phosphatic specialties.

†MFD. UNDER U. S. PAT. 2,678,940
‡U. S. PAT. 2,722,479

Virginia-Carolina Chemical Corporation produces—V-C Chemicals ...V-C Fertilizers and V-C Superphosphates...V-C Phosphate Rock ...Vicara*, Zycon*, Wavecrepe* and other zein fibers...V-C Multiwall Paper and Textile Bags...V-C Cleansers...V-C Nemacides.
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SALES

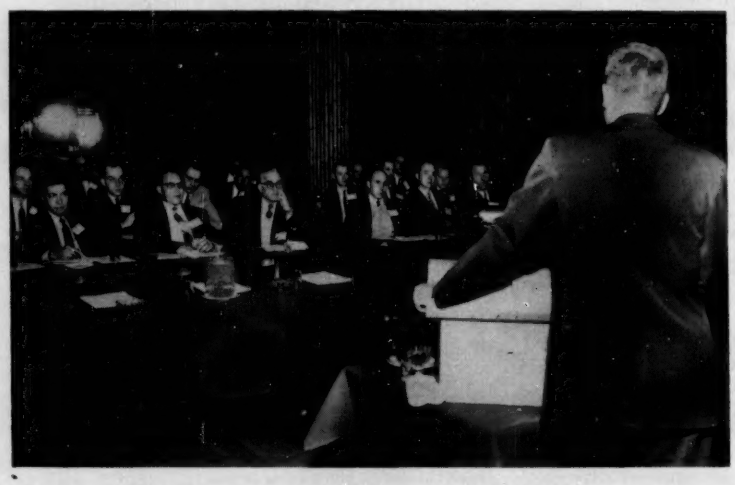
From Confusion, Higher Rates?

The confusion surrounding the size of the proposed freight rate increase dissipated rapidly last fortnight when Eastern railroads clarified the nature of their petition for an emergency 7% general increase. The Eastern Railroads Presidents' Conference will ask the Interstate Commerce Commission for both the 7% boost and a 15% general hike—a total increase of 22%. Western railroads are expected to take the same position. Southeastern railroads have so far asked only for the 7% rise.

Eastern and Western rail groups earlier had petitioned ICC for a 15% increment (*CW, Oct. 6, p. 56*), followed it with the request for the 7% hike to cover costs stemming from new union wage contracts. ICC considered the 7% increase as part of the original 15% boost and not an additional amount. The roads were told to amend their petitions if they wanted a total increase of 22%.

In another recent move, ICC extended the period for filing protests on the proposed 15% increase. The deadline was advanced to Feb. 1 from Dec. 24. No change has been made in the schedule for the proposed emergency 7% boost.

The railroads are expected to get a sizable portion of their proposed rate



New Slant to Symposiums

USE of technical symposiums for product promotion is taking new directions. Oronite Chemical, in scheduling symposiums for its isophthalic acid, has invited from potential customers only technical personnel who have had working experience with the material. (Usually, invitations are extended to many persons who are "just interested" or are "likely prospects," but who don't necessarily have experience with the product.)

Naturally, Oronite's purposes differ, too. While most symposiums are oriented to arouse interest in a new chemical, Oronite aims more at determining what areas the company's commercial development staff should explore. To accomplish this, the sessions lean heavily on "purely technical discussion" of isophthalic acid applications and development problems. In opening sessions last week in New York, technical personnel from Oronite and California Research Corp. led discussions with some 40-50 guests present each day.

The two-day symposium was repeated three times in New York, will be held twice in Chicago, once in Cleveland.

Oronite's use of the symposium further attests to its popularity as a development tool. Commercial Solvents, Delaware Chemical and Goodyear are among the companies that have recently tried the method (*CW, Feb. 25, p. 49*).

CHEMICALS OUTLOOK

December, 1956

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

WYANDOTTE CAUSTIC SODA AND CHLORINE CAPACITY INCREASED.

Plans have been announced for construction of a large-capacity chlorine-caustic manufacturing plant at Wyandotte's new plant site near Baton Rouge, Louisiana. This 1200-acre site on the Mississippi River, where an $8 million ethylene oxide plant is already under construction, has been named the Geismar Works.

The new electrolytic plant will require an investment of over $20 million, and is scheduled for completion in the last half of 1958. The Geismar facilities will increase, by nearly 60 per cent, the total caustic soda and chlorine capacity of Wyandotte Chemicals, which is already one of the largest suppliers of caustic soda and chlorine in the United States. With this increased production, Wyandotte will continue to meet the growing demand for these products.

PLURONICS FOR LOW-COST SURFACTANT-EMULSION DRILLING MUDS

The Pluronic* series of polyols has recently been used successfully in preparing low-cost oil-well drilling muds. Properties of the Pluronics that are desirable for this application include emulsifying, viscosity control, lubricity, deflocculation and filter cake improvement. In addition, a built-in anti-foam action keeps foaming at a minimum.

For those areas where water is used for drilling, Pluronic L61 is recommended. Viscosities can be held low when passing through formations which add solids to the mud. Further, increased bit penetration and decreased bit wear result in cheaper and faster holes.

In the preparation of oil emulsion muds, Pluronic F68LF is outstanding. 1% of Pluronic F68LF, based on the weight of the bentonite, effectively emulsifies 8% lease crude oil in the drilling fluid. The inclusion of 500-1000 p.p.m. of calcium chloride with the Pluronic-emulsion system completes the mud preparation. Nothing further need be added! Viscosity will be low and drilling rate high. The filter cake will be thin and strong with water loss below 10 c.c.

More detailed technical information is available. Address inquiries to Department CO for prompt attention.

*REG. U.S. PAT. OFF.

Wyandotte CHEMICALS

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WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

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GLYCOLS • SYNTHETIC DETERGENTS (anionic and nonionic) • CARBOSE ® (Sodium CMC) • ETHYLENE DICHLORIDE • DICHLORODIMETHYLHYDANTOIN
CHLORINATED SOLVENTS • *OTHER ORGANIC AND INORGANIC CHEMICALS*

SALES

increase. And as rail rates often set a pattern, truck and barge lines may also seek upward rate adjustments.

DATA DIGEST

• **Catalog:** Brochure describes physical and chemical properties, packaging, and lists applications of all company chemical products. Solvay Process Division, Allied Chemical & Dye (New York).

• **Copolymer latex:** 20-p. booklet presents data on a fortified styrene-butadiene copolymer, Dylex latex K-52 for use in paper coating. Topics covered include starch and dextrin compatibility, stability to pigments, pigment binding and machine coating. Koppers Co. (Pittsburgh).

• **Epoxy resins:** Technical bulletin gives physical properties and container weights for diethylene triamine, triethylene tetramine, dimethylamino- and diethylaminopropylamine and α-methylbenzyldimethylamine. Applications are suggested in curing liquid epoxy resins. Carbide and Carbon Chemicals (New York).

• **Insect control:** 60-p. booklet describes and illustrates more than 500 insects, indicates those that can be controlled by toxaphene. Hercules Powder (Wilmington, Del.).

• **Silicones:** Bulletin provides data on typical physical properties, methods of emulsification and application of Dow Corning 1107, a silicone fluid in an uncured state. Uses are suggested as an adhesion minimizer for sticky materials and as a water repellent for paper, glass, metal and some stone materials. Dow Corning (Midland, Mich.).

• **Catalog:** Folder tabulates physical properties and applications for vinyl monomers, tertiary acetylenic alcohols, ditertiary acetylenic glycols, ditertiary saturated glycols, substituted acetylenes and surface-active agents. Air Reduction Chemical (New York).

• **Hydrolubes:** 16-p. brochure describes advantages and disadvantages of water-base, fire-resistant hydraulic fluids, gives data on company hydrolubes and their uses. Carbide and Carbon Chemicals (New York).

• **Fertilizers:** Comprehensive 111-p. book describes the application of commercial fertilizers in European forestry. Special emphasis is given to the role of nitrogen. The book is based on publications of Ruhr-Stickstoff

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SALES

Aktiengesellchaft. Nitrogen Division, Allied Chemical & Dye Corp. (New York).

• **Silicone emulsions:** Leaflet delineates properties, dilution recommendations, stability, toxicity, compatibility and uses of three emulsions, HSC 35, 362 and 515 in mold-release operations. Harwick Standard Chemical Co. (Akron, O.).

• **Manufacturers' representatives:** Directory lists 14,500 agents by geographic area, gives product line carried and area covered. Manufacturers' Agent Publishing Co. (New York).

• **Glass fiber:** Folder provides technical information on acoustical and thermal performance and suggests applications for glass and quartz fibers in plastic laminating and insulation. LOF Glass Fibers Co. (Toledo, O.).

• **Exhibit directory:** 1957 edition gives schedule of shows and exhibits. Volumes covering industry classification listing, chronological listing and geographical listing can be obtained separately or as a complete set. Exhibitors Advisory Council, Inc. (New York).

• **Catalog:** 37-p. booklet lists physical properties for some 375 industrial, agricultural and pharmaceutical chemicals. Brief descriptions of end-uses are given for major chemical product groups. Dow Chemical (Midland, Mich.).

• **Tin:** Illustrated 16-p. brochure describes properties and various applications of tin in the chemical, automobile, construction, electrical and electronics equipment, atomic energy and the machinery industries. Malayan Tin Bureau (Washington, D.C.).

• **Sesame oil:** Leaflet gives average specifications of U.S.P. material. Welch, Holme & Clark Co. (New York).

• **Corrugated boxes:** Booklet offers suggestions for reducing packaging labor costs by use of corrugated boxes. Hinde & Dauch (Sandusky, O.).

• **Plastics:** 12-p. brochure, "Condensed Reference File," summarizes characteristics and principal fields of applications for polyethylene, vinyl, phenolic, styrene, epoxy and polyester plastics. Bakelite Co. (New York).

• **Industrial fabrics:** Booklet describes composition and applications of textiles combined with rubber, plastics, and special-purpose compounds. Wellington Sears Co. (New York).

Polyvinyl Chloride Resin plant for Escambia Chemical Corporation designed and being built by Blaw-Knox

Latest addition to list of Blaw-Knox built RESIN plants

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Resin Clients served by Blaw-Knox

Installations for these companies suggest the extensive experience and broad background in design and erection of resin production facilities.

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Amalgamated Chemical Company
American Cyanamid Company (3)
American Marietta Company
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Arco Paint Company
Armstrong Paint and Varnish Company
Aulcraft Paints, Ltd., Toronto
Barrett Division, Allied Chemical and Dye Corp. (2)
Bennett Paint and Glass Company
Brunswick-Balke-Collander Company
Bryant Electric Company
Bunge Y. Born, Buenos Aires
Canadian General Electric Company
Canadian Resins and Chemicals, Ltd.
Carbide and Carbon Chemicals Corp.
Carpenter-Morton Company
Catalin Corporation of America (2)
Chrysler Corporation
Continental Diamond-Fibre
Cook Paint and Varnish Company (2)
Crown Oil Company
Devoe and Raynolds Company (2)
Dow Chemical Company
Durez Plastics and Chemicals
Escambia Chemical Corporation
Falk and Company
Filtered Rosin Products Company
Firestone Tire and Rubber Company
General Electric Company (3)
Gilman Paint and Varnish Company
Glidden Company (2)
Goodyear Tire and Rubber Company (2)
Grand Rapids Varnish Corporation
Herbert Evans Company, Durban, South Africa
Hercules Powder Company
Hilton-Davis Company
Imperial Varnish & Color Company
Insular Chemical Corporation
Interchemical Corporation (2)
Irvington Varnish and Insulator Company
Jamestown Paint and Varnish Company
Libby-Owens-Ford Glass Company, Plaskon Division
Lilly Varnish Company
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Marshall Eclipse Division, Bendix Aviation Corporation
Glenn L. Martin Company
McDougall-Butler Company
National Lead Company
National Starch Products, Inc.
Perkins Glue Company
Plywoods-Plastics Corporation
Pratt and Lambert, Inc. (2)
Raybestos Manhattan Inc.
Reliance Varnish Company
H. H. Robertson Company
Schenectady Varnish Company
Scholler Brothers
Scientific Oil Compounding Co.
Scott Paper Company (2)
Seidlitz Paint and Varnish Co.
Shell Chemical Corporation
Sherwin-Williams Company
F.A. Stresen-Reuter, Inc.
Stroock and Wittenburg (2)
Toronto Elevators, Ltd.
United Oil Manufacturing Co.
U.S. Industrial Chemical Co.
U.S. Rubber Company
Visco Products Company
Westinghouse Electric Corp. (2)

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P—3673—Chemical Week
520 No. Michigan Ave., Chicago 11, Ill.

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Excellent opportunity for man having several years experience. Liberal benefit programs. Location, Penna. Replies confidential. Reply

P-3168, CHEMICAL WEEK
Class. Adv. Div., P. O. Box 12, New York 36, N. Y.

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Experienced manufacture vinyl tile. Liberal benefit programs. Replies confidential. Reply

P-3167, CHEMICAL WEEK
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Medium sized chemical company is seeking a chemist with sufficient experience to head up and direct its research and development program. Excellent opportunity and future for the right party. Experience in detergent formulations helpful. Write giving detailed resume and salary expectations to

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(additional ads on following page)

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CHEMICAL WEEK • ADVERTISERS INDEX

December 8, 1956

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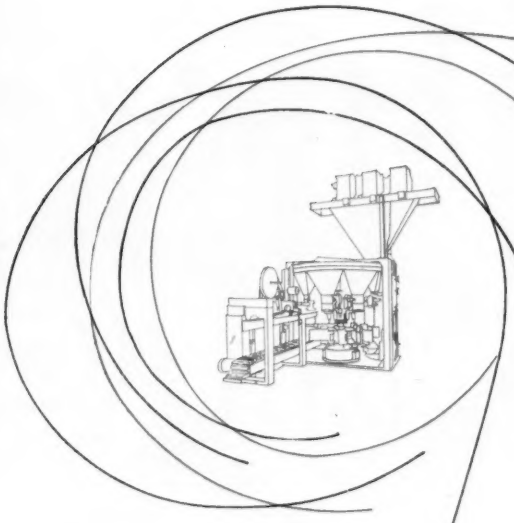

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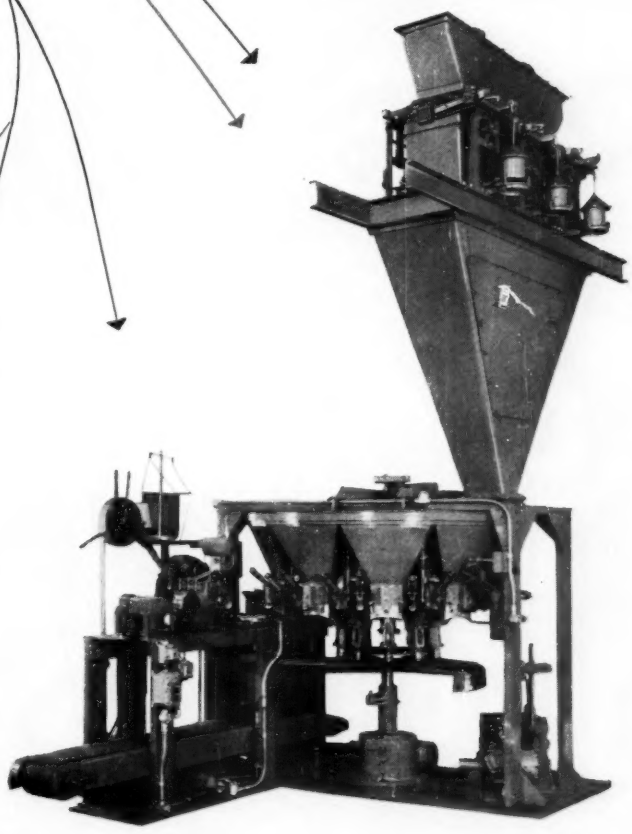

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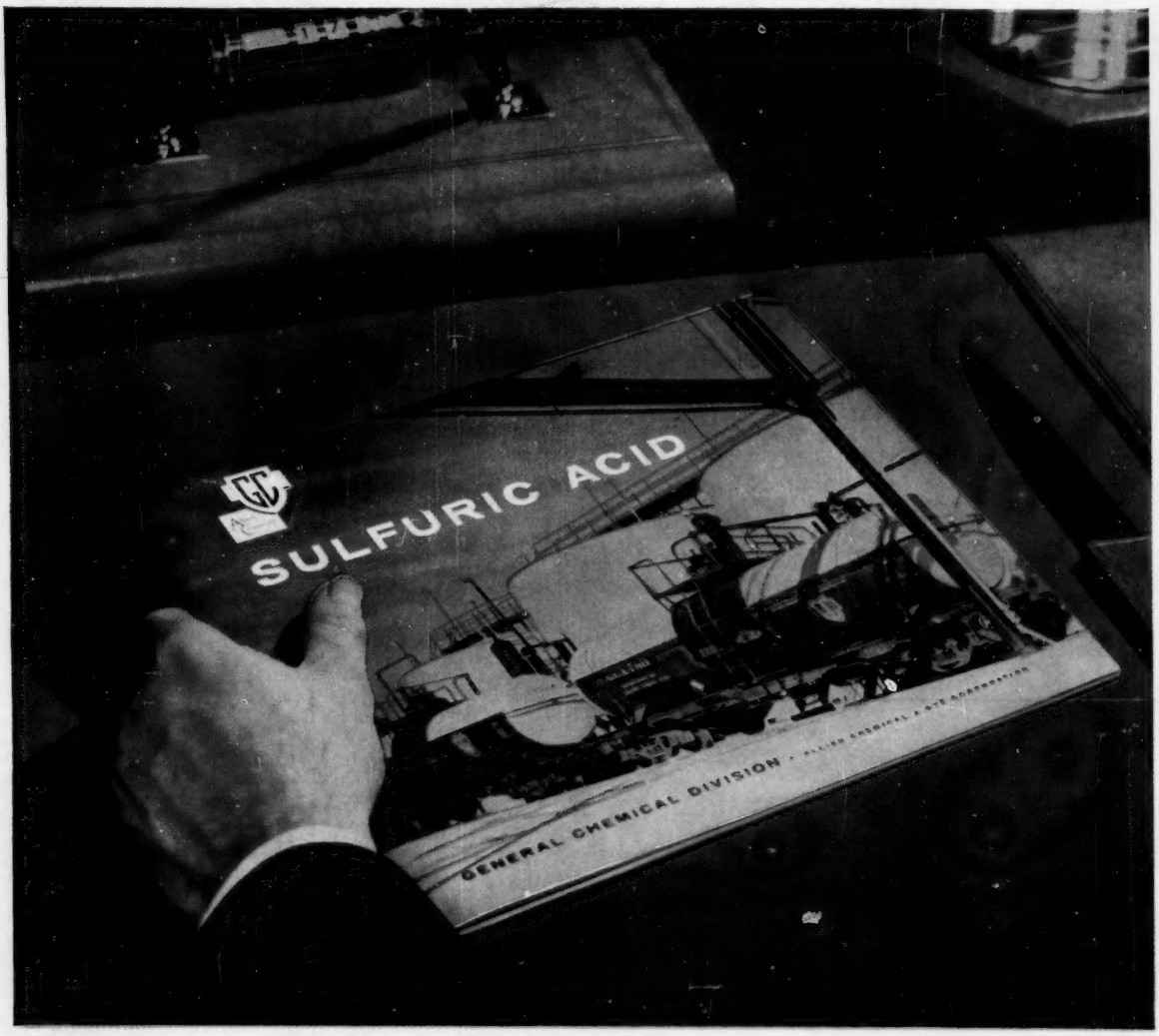

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In addition to interesting background information, this fact-packed bulletin covers such pertinent topics as physical properties . . . storage and handling methods and equipment . . . methods of analysis, etc. Included are many tables, charts and graphs on Sulfuric Acid and Oleum, some of which are not available elsewhere.

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